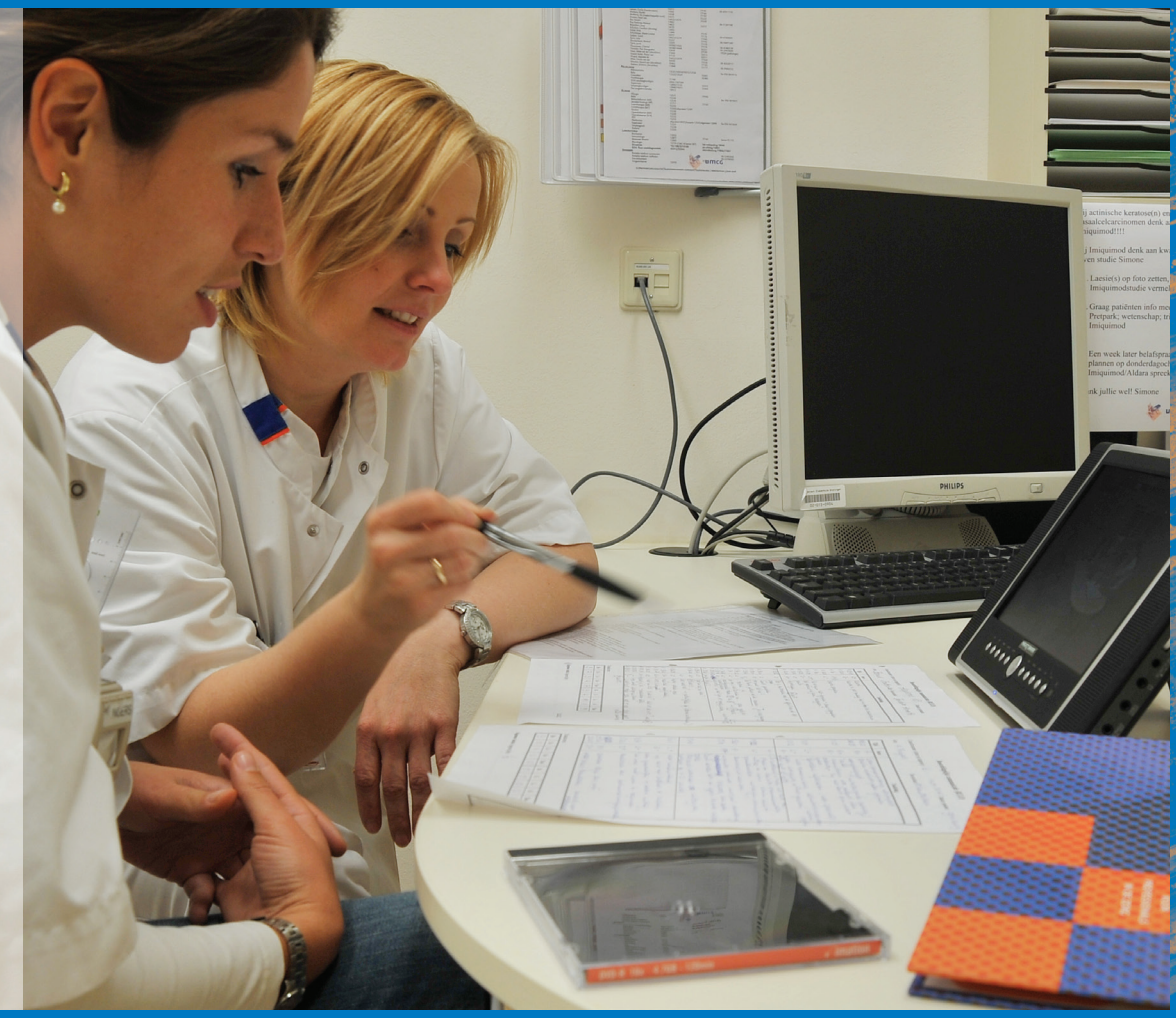
Jan C. Wouda



Patient education in medical-specialist consultations

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Chapter 1

General introduction

1.1 Introduction

Physicians educate their patients about diagnostic procedures and findings, treatment options, disease prognosis, and health consequences. Thus, patient education is an essential component of the physicians' role as a communicator and physicians are supposed to be experts in patient education as required by the CanMEDS competency framework for the training of physicians [1]. By patient education we are referring to the use of educational methods, such as the provision of information, advice, and behavior-modification techniques, in order to influence the patients' knowledge, opinions, and health and illness behavior so as to ensure that the patient is able to cooperate effectively in deciding on the care which he/she receives and can make the best possible contribution to that care [2]. In accordance with this definition, patient education implies that a physician must not only provide information but also must help the patient to comprehend and digest the information. Subsequently, the physician can help the patient to make a considered decision based on the information and to adapt her/his behavior accordingly.

In the last fifty years, both the patient-physician relationship and the healthcare system have changed substantially. Physicians are now legally obliged to inform their patients properly, and to involve them in treatment decisions and their execution. In 2006 the Dutch government introduced a new healthcare financing system involving market forces to stimulate patient involvement and cost reduction. Despite these developments and despite the desire of most patients to be involved in their own healthcare, patient participation in healthcare is still limited. Recently, the Dutch National Board of Public Health published a memorandum, in which patient participation, self-management, and empowerment are strongly advocated in order to improve the quality, effectiveness, and efficiency of healthcare [3]. The memorandum encourages physicians to educate their patients to take a more active, equivalent role in the consultation.

The question is whether physicians in general and medical specialists in particular are sufficiently competent to execute this and other challenging patient-education tasks. Medical specialists' communication with patients leaves a lot to be desired, as is shown by patients' discontent about treatment, lack of information, not being heard and not being involved in decision-making, but also by misunderstandings and conflicts

between patients and physicians, and by patients' non-adherence to medical advice [4-13]. Although communication-skills training is nowadays a regular part of undergraduate medical curricula, the effects of training on physicians' communication in clinical practice is not impressive [14]. Furthermore, communication skills in general and patient-education skills in particular are little addressed in medical-specialist residency training. Thus, it is doubtful whether medical specialists possess the competency for effective patient education in clinical consultations.

This thesis aims to determine whether this judgment is correct. The thesis also aims to determine how medical specialists' competency in patient education could be improved. We investigated medical specialists' competency in patient education, how patient-education skills are acquired, and how the teaching of patient-education skills in medical-specialist training could be improved. This introduction contains a historical overview of patient education in medical-specialist consultations, and of the teaching of communication skills in general and patient-education skills in particular. The overview focuses on the Dutch situation, although we also refer to developments in other western countries. The last section provides the research questions of the thesis.

1.2 Patient education in medical consultations: a historical overview

1.2.1 The 1950s and 1960s

Until the late 1950s the medico-centric perspective dominated the patient-physician relationship. The physician had authority and was solely responsible for decisions about diagnosis and treatment. Especially in medical-specialist consultations, patient education only consisted of disease-related information, often in incomprehensible medical language, and treatment-related instructions. Patients were not expected to participate actively in diagnosis and treatment decisions, and their ideas, beliefs, and values were not taken very seriously.

In his book "The Doctor, his Patient and the Illness" Michael Balint was one of the first to stress the importance of good patient-physician communication [15]. He stated that the physician himself was the most used medicine in general practice and that, despite our lack of knowledge about the

effects of reassurance and advising, both are probably the most frequently used types of medical treatment. He asked for recognition of the emotional as well as the physical aspects of a patient's complaint and was probably the first to advocate the skills of attentive listening to patients. Balint's ideas inspired many general practitioners, especially in their approach to patients with medically unexplained complaints. However, these ideas mainly focused on the diagnosis of physical complaints and patient education was still not really part of the picture. Although the study of patient adherence dates back to the 1940s, and the terms compliance and adherence were first used in 1966 [16], in medical-specialist consultations less than 5% of consultation time was used for patient education [17].

1.2.2 The 1970s and 1980s

In the 1970s and 1980s, the patient-physician relationship changed dramatically due to several developments. First, in the late 1960s and early 1970s many protest movements and emancipatory organizations struggled for equality on various terrains. Patients' rights advocates and organizations were established including patient self-help groups and self-care movements. Patients claimed their place as active participants in the consultation, and fought for self-determination and legal rights. These social changes eventually resulted in legislation concerning the provision of information, informed consent, privacy protection, and the right to complain about the care received. Furthermore, in the late 1970s and early 1980s socially active general practitioners founded healhcare centers and addressed not only psychosocial issues but also health-determining societal conditions and inequalities. They regarded patient education as an important means of engaging their patients in illness prevention, improvement of living conditions, and community-based healthcare. One of the Dutch left-wing political parties founded such a politically-engaged healthcare center. Second, medico-technical developments complicated treatment decisions. Diagnostic and treatment options expanded rapidly. For several diseases, equivalent treatments became available, and other diseases that were untreatable before or lethal in the short term became chronic conditions, and patients' life spans could be prolonged substantially. Thus, physicians had to take into account patients' wishes and quality of life considerations. Third, patient education is embedded in the wider field of health promotion, which flourished

in the 1970s due to the rise of behavioral and lifestyle-related diseases. The 1974 Lalonde rapport acknowledged for the first time that not only biomedical aspects are important in defining health, but that also citizens in general and patients in particular could improve their health through behavioral factors related to their lifestyle [18]. At first, health-promotion activities mainly used knowledge transfer as the influencing technique, but gradually other behavior-modification techniques, originating in social psychology and educational research, were used in health-promotion interventions. Fourth, political and economic factors also supported the promotion of health education, self-determination, patient participation, and health responsibility, since healthcare costs increased substantially in the 1980s, and the economic climate led to the call for reductions in governmental costs.

All these developments forced physicians to pay more attention to patient-centered communication and patient education in their consultations. The concept of patient-centered communication originated from the power-shift model in which the patient-centered exchange of information opposes the doctor-centered exchange of information, especially in the diagnostic phase of a consultation [19]. Gradually, the concept of patient-centeredness was extended to all phases of the consultation and became a moral philosophy with core values such as considering patients' ideas, wishes, and perspectives, encouraging patients to provide input into and participate in their care, and enhancing partnership and understanding in the patient-physician relationship [20-22]. Thus, patient education became an inseparable part of patient-centeredness and physicians were supposed to promote patient participation and shared decision-making [23]. However, only general practitioners embraced these ideas and the research on patient-physician communication that blossomed in the early 1990s mainly involved primary-care consultations. In primary care, which by definition is more connected to societal movements than hospital care, patient education directed at behavior modification and lifestyle change became part of illness prevention and treatment. In medical-specialist consultations patient education was not yet taken very seriously [24-26].

1.2.3 The 1990s

In the 1990s, patient education became more and more a natural part of primary-care consultations. This development was supported by legisla-

tion, on the one hand, and media attention, on the other. In the Netherlands, but also in most other western countries, patients' rights were firmly anchored in health laws [27], and the media paid ample attention to health and the healthcare system. Numerous programs were broadcast about health problems and the healthcare system, varying from educational programs about coping with illness, medical procedures, and the work of physicians to entertainment programs about patients' experiences and physicians' misconduct. Thus, the general public became more aware of their rights and became more critical about the care they received, which forced physicians to be more transparent about their work and achievements. Medical specialists, especially in oncology, also became more aware of the importance of patient education for secondary prevention and improvement in quality of life [28]. Medico-technical innovations played a role too. Patients were confronted with more complex and specialized procedures, patients faced more healthcare choices that were consequential, and patients with chronic conditions had to adhere to complex drug and lifestyle recommendations in order to achieve prolonged quality of life. Furthermore, patient-education research became a grown-up discipline with national and international research platforms, journals, and congresses [29]. However, research about patient-specialist communication was still in its infancy [30].

1.2.4 The 21st century

In the first decade of this century, electronic information supply by the internet became commonplace, and patients with internet access now collect health information away from the traditional patient-physician encounter [31-33]. Furthermore, health and health-related subjects are nowadays a dominant topic in the societal discourse, with ample attention paid to subjects related to healthy lifestyles, such as healthy food, losing weight, and physical exercise. These societal developments revived the ideas from the 1980s about patient participation and self-management. However, patients are now better-informed healthcare consumers, which places greater demands on accessibility, service, and outcomes [34]. Just as in the 1980s, idealistic motives as well as politico-economic interests underlie these claims for patient involvement, patient empowerment, and self-determination, and patients are encouraged to take responsibility for their own health and recovery. In the afore mentioned memorandum

of the Dutch National Board of Public Health, in which patient participation is strongly advocated, the training in patient education of healthcare professionals and especially of physicians, is emphasized, and professional organizations are obliged to include patient-education competencies in their registration prerequisites [3].

From the 1990s up until the present, the concept of patient-centeredness has dominated the research of physicians' patient-education behavior and outcomes. However, patient-centeredness has turned out to be a complex and elusive concept, which does not come with a sound theoretical framework from which the patient-education objectives of a consultation and the matching communication tasks of the physician can be derived [14,35-38]. The evidence about the effects of patient-centered communication on patient outcomes has also remained limited [14,21,39,40]. As a consequence, functional models of patient education have emerged, which clarify the relationships between physicians' patient-education goals and communicative behaviors, on the one hand, and patients' responses and outcomes, on the other [40-43]. Some models elucidate the prerequisites and processes that determine the outcomes of patient-education activities [40,44,45]. Patient-education elements, such as fostering the relationship, listening to patients' wishes and concerns, proper explaining, and involving the patient in treatment decisions, have had unmistakably positive effects on patient satisfaction, comprehension, recall, and adherence [4,11,16,46-51]. However, the effects of enhancing patient participation and shared-decision making in medical consultations on intermediate outcomes, such as adherence to regimes and self-management, and on health outcomes are less convincing [52,53]. On the other hand, more advanced patient-education methods, which directly aim to improve health decisions and health behavior, such as facilitating regime adherence, risk communication, usage of decision aids, and motivational interviewing have been quite successful [54-59].

Despite the call for more attention to patient education in clinical practice and in medical-specialist training, patient education is still undervalued in medical-specialist consultations [10,60]. This lack of interest may be attributable to several factors. First, patient education in medical-specialist consultations is not rewarded financially or otherwise. Time constraints and the medical problem-solving culture even discourage patient-education efforts. Second, patient education in hospitals, especially for patients with chronic conditions, is often transferred to

other healthcare providers, such as specialized nurses, nurse practitioners, dietitians, physiotherapists, and psychologists, discharging medical specialists from their patient-education duties. Thus, medical specialists are neither encouraged nor compelled to demonstrate excellent patient education.

1.3 Patient education in medical curricula: a historical overview

In the last fifty years, in medical education the teaching of communication skills in general and patient-education skills in particular developed parallel to the societal and healthcare developments described above.

1.3.1 Knowledge-centered teaching

Until the early 1970s, the Flexner report was what shaped undergraduate medical education [61]. Basic and clinical sciences were separated. Basic sciences, such as anatomy, physiology, histology, and biochemistry were dealt with in the initial years, while clinical sciences, such as pathology, pharmacology, and surgery were covered in later years. The distinctive medical specialties and their related knowledge and skills, such as history-taking and physical examinations, were addressed just before students began their internships. Lectures were the dominant teaching method, and examinations focused on knowledge reproduction. Sometimes the curriculum contained lectures about psychology with patient-physician communication as one of the topics. However, the teaching of communication skills was not embedded in the curricula [62], and most medical students graduated without ever interviewing a patient under direct supervision [63].

1.3.2 Problem-based learning

In the 1970s, some medical schools such as McMaster University in Hamilton, Canada, and Maastricht University in the Netherlands, developed a problem-based curriculum with small-group tutoring and skills training. Communication-skills training (CST), including small-group sessions with videoed demonstrations, role play exercises, feedback, and reflection, acquired a fixed place in these curricula [63,64]. However, CST pro-

grams have traditionally concentrated on the first, diagnostic half of the consultation. Patient-education issues were less often addressed [65-70]. Several factors promoted this attention to the diagnostic part. First, the curricula still suffered from the historically developed imbalance, reflected in clinical practice, between the teaching of diagnosis and problem management [71]. Second, medical education adopted much of the social sciences curricula, which already contained social-skills programs, based on the ideas of Carl Rogers [72] and Allen Ivey [73], with much attention paid to the listening skills and, to a lesser extent, to the skills of conversational control. Third, the CST programs prepared students for their main task during their internships, which is questioning patients about their complaints and health status. Interns were not supposed to educate patients. Thus, students were not taught patient-education skills with one curious exception: breaking bad news. Although breaking bad news is regarded as one of the most challenging consultations, many CST programs contained one or two small-group sessions with role-play exercises in breaking bad news, while students still lacked basic patient-education knowledge and skills [70].

The problem-based curricula and CST programs also required new assessment procedures and instruments. In addition to knowledge assessment, skills assessment was needed. The Objective Structured Clinical Examination (OSCE) was developed in order to reliably assess clinical skills in standardized conditions [74]. For the teaching and assessment of communication skills, several guidelines and accompanying assessment instruments were developed [75,76]. Nearly all guidelines and assessment instruments were based on the concept of patient-centeredness and used checklists or rating scales featuring required communication behaviors, ordered according to the different phases of a consultation. The instruments differed in their empirical validation. However, these instruments lacked a theoretical basis that would clarify the shifting consultation goals and the physician's tasks along with matching communication skills to attain these goals, nor did they predict clinical outcomes [14,42,77].

Although most instruments contained items concerning patient-education issues, such as explaining and shared decision-making, patient-education skills were hardly assessed in undergraduate OSCE's, since communication-skills training and assessment of students focused on history-taking.

1.3.3 Postgraduate education

In the late 1970s, communication-skills training also became part of general-practice vocational training [78-81]. At first, the main educational approach consisted of reflection on real patient encounters. Since the 1990s, in several western countries, patient-physician communication issues have been addressed in primary care and general-practice vocational training by means of assessment of and feedback on videoed consultations with real patients [82-86]. Also starting in the 1990s, communication workshops and courses were offered to medical-specialist residents and consultants especially in the field of oncology. These elective courses mainly concerned exploring patients' concerns and breaking bad news, using didactics, demonstrations, role-play with feedback, and reflection as teaching methods [87,88]. Some workshops for consultants even focused on the teaching of communication skills to students and residents [89-91]. Other workshops focused attention on the use of learned skills in clinical practice [92]. However, assessment of performance in clinical practice was lacking [93]. In the Netherlands, elective courses and workshops for consultants were offered [94]. Several initiatives used videoed outpatient consultations for assessment and feedback [26,95]. In some western countries, elective communication courses were offered in residency training [96,97], and in the late 1990s compulsory courses were incorporated in the training of Dutch residents in obstetrics and gynecology and in surgery [98,99]. These courses addressed challenging patient-education issues such as breaking bad news and dealing with conflict, non-adherence, and complaints. However, the effects of these courses on residents' communication behavior in clinical practice were not investigated.

1.3.4 Competency-based learning

At the turn of the century, medical education, inspired by a renewed emphasis on the essential abilities physicians need for optimal patient outcomes and on preparing students for clinical practice, switched from problem-based learning to an outcomes-based or competency-based approach. The CanMEDS competency framework, which was developed in the 1990s, is probably the best-known example of this approach [1]. Nowadays, all Dutch medical-specialist curricula are based on this competency framework [100]. The CanMEDS framework comprises numerous compe-

tencies organized thematically around seven metacompetencies or roles that a physician should master. At the heart of the framework lies the physician's role as Medical Expert, complemented by six generic roles: Communicator, Collaborator, Manager, Health advocate, Scholar, and Professional. As medical experts, physicians integrate all areas of expertise. Thus, expertise that is defined as a stable superior ability to handle challenging situations effectively [101], is the benchmark for the assessment of physicians' clinical competency. Challenging patient-education issues that are mentioned in the CanMEDS framework are: obtaining informed consent; delivering bad news; addressing anger, confusion and misunderstanding; and dealing with non-adherence.

The introduction of the CanMEDS framework in undergraduate and postgraduate curricula influenced the teaching of communication skills in several ways. First, since the key competencies of the communicator role explicitly refer to patient-education competencies, the teaching of patient-education skills was gradually implemented in undergraduate curricula [102,103] and in postgraduate courses [104]. However, during their internships, students still focus their attention on history-taking and time-management, and are still not supposed to educate their patients [105]. Second, the concept of patient-centeredness was criticized and regarded as being unsuitable as a leading concept for communication programs [14,41]. Today, a functional approach is advocated, in which the physicians' communication tasks and matching skills are derived from the goals and desired outcomes of the consultation [40-42,106]. Third, workplace-based learning came into focus. Workplace-based learning means that students and residents improve their competencies by applying their knowledge and practicing their skills in supervised clinical situations followed by constructive feedback and reflection. New assessment methods matching workplace-based learning were also developed, such as the mini-clinical evaluation exercise (mini-CEX), the direct observation of procedural skills (DOPS), and multisource feedback [107,108]. All the assessments, feedback, and reflections that a learner has collected are documented in the learner's portfolio. As mentioned previously, communication assessment and feedback based on videoed consultations already existed in primary care and general-practice vocational training. In undergraduate education several initiatives have since been developed using videoed consultations for self-assessment, feedback, and reflection [109].

However, we have found no study using videoed consultations for communication assessment and feedback in medical-specialist training.

1.4 Educational challenges

Nowadays training in communication skills is a regular part of undergraduate medical curricula, and most undergraduate communication-skills programs also teach patient-education skills. However, the effects of communication-skills training programs are not impressive. Small to moderate improvements have been found in students' communication competency after one or more communication courses [110-115], but deterioration in students' communication competency over time has also been reported [116-118]. Furthermore, although communication-skills training appears to be effective in improving targeted communication skills, the effects of communication-skills training on performance and outcomes in clinical practice remain obscure [111]. Postgraduate communication courses also appear to have positive effects on the communication competency of practicing physicians [84,87,88,110,119-123], but these effects are limited [93,124,125]. Only interventions for residents and consultants, which specifically address communication behavior in clinical practice, seem to have some positive effects on behavior and outcomes [122,126,127]. Even the ample attention paid to communication skills in general-practice training has hardly any effect at all on clinical communication behavior [84,85]. Furthermore, the effects of patient-physician communication education on consultation outcomes, such as patient satisfaction, understanding, adherence, self-management, and health status, are nearly absent [39,128-131]. Veldhuijzen [14, page 15] therefore concluded that:

> "These findings points to the sobering conclusion that the vast effort to shape or change how doctors communicate with their patients has in fact been rather ineffective in practice."

Apparently, an expert level of communication competency in clinical practice is difficult to attain. The transfer of communication competency, acquired in formal learning conditions, into clinical practice appears to be especially problematic [19,132-134]. The lack of transfer is often attributed to the inhibiting influence of clinical culture and supervisors' rejective behavior [64,135-143]. Continuing positive reinforcement of favorable communication behavior in clinical practice might diminish these negative

effects [145]. However, even if the clinical culture supports the performance of learned communication behavior, the transfer of this behavior into clinical practice will not be clear-cut due to case-specificity. Case-specificity means that physicians' individual quality of communication performance varies depending on the content, type, and context of the consultation. Until recently, case-specificity was mainly regarded as an assessment problem, since the case-specific variation in performance jeopardized the assessment reliability and validity. By assessing communication competency in more than one consultation, such as in an Objective Structured Clinical Examination (OSCE), a reliable estimate of a trainee's average communication competency could be obtained. However, in a functional, outcomes-based approach to communication assessment physicians' performance variability should be limited, since a physician should demonstrate superior communication performance in all consultations regardless of the type and complexity of the consultations. Otherwise, performance quality could fall below standard in some consultations, and patients might suffer from physicians' inferior communication performance. Case-specificity implies that a set of generic or transferable communication skills that show a high level of stability and have applicability to a wide range of encounters does not exist. The effect of communication education will therefore be limited if the training is restricted to a predetermined set of skills in standardized and simulated situations. Thus, contextual learning as provided by workplace-based learning is considered essential nowadays for clinical communication competency development [8,134,142,144]. However, the causes of case-specificity and its effects on physicians' communication behavior and on consultation outcomes have hardly been investigated at all until now.

1.5 Research questions and outline of thesis

In view of the limited attention to patient education in medical-specialist consultations and in postgraduate training, it is doubtful whether medical specialists are sufficiently competent in providing effective patient education in clinical consultations. This thesis aims to determine whether this judgment is correct. The thesis also aims to determine how medical specialists' competency in patient education could be improved. Based on our analyses in the previous sections, we have formulated six related

research questions. These research questions will be addressed in the following chapters, for which we now provide an overview as follows.

1 What factors determine the learning and performance of physicians' communication behavior?
2 How can we reliably and validly assess physicians' patient-education competency?
3 How great is the patient-education competency of residents and consultants during challenging consultations?
4 What is the effect of medical training and clinical experience on the patient-education competency of students, residents, and consultants?
5 How does case-specificity influence patient-education competency?
6 Could self-assessment of and supervisors' feedback on residents' communication performance improve residents' patient-education competency?

Chapter 2 presents the reflective-impulsive model of communication behavior, which contains the factors influencing the learning and performance of professional communication behavior. This model explains the limited results of training and experience on physicians' communication competency. The chapter also specifies the learning objectives and teaching methods needed to attain expertise in clinical communication through deliberate practice. Chapter 3 describes the reliability and validity study of the CELI instrument that we used in the empirical studies of this thesis. We established the patient-education competency of residents and consultants in simulated consultations (Chapters 4 and 5) and in outpatient consultations (Chapters 3, 6, and 8). Chapter 4 describes the effects of medical training and clinical experience on the patient-education competency of students, residents, and consultants in a simulated challenging consultation. Chapters 5 and 6 address the effect of case characteristics and context characteristics, denoted as case-specificity, on communication performance inconsistency. Chapter 5 describes the effect of consultation-type similarity on performance inconsistency in simulated consultations. In this study we also investigated the relationships between performance inconsistency, on the one hand, and patient-education competency and some factors that influence patient-education competency, on the other. In Chapter 6 we compared residents' and consultants' patient-education competency in outpatient consultations.

Chapter 7 contains the learning objectives and teaching methods needed to attain expertise in patient-education competency through deliberate practice, and elaborates on a workplace-based learning method of communication competency improvement using videoed consultations. Chapter 8 describes the feasibility and effects of self-assessment of and supervisors' feedback on residents' patient-education competency using videoed outpatient consultations. In Chapter 9 the findings of the preceding chapters are integrated and discussed. The summary found in Chapter 10 concludes the thesis.

The thesis is based on five empirical research papers and two theoretical review papers. Since every paper was written to be read on its own, repetition and overlap across chapters was inevitable.

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Chapter 2

Education in patient-physician communication: How to improve effectiveness

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2.0 Abstract

Context/objective
Despite educational efforts expertise in communication as required by the CanMEDS competency framework is not achieved by medical students and residents. Several factors complicate the learning of professional communication.

Methods
We adapted the reflective-impulsive model of social behavior to explain the complexities of learning professional communication behavior. We formulated recommendations for the learning objectives and teaching methods of communication education. Our recommendations are based on the reflective-impulsive model and on the deliberate-practice model which complements the reflective-impulsive model. Our recommendations are substantiated by those we found in the literature.

Results
The reflective-impulsive model explains why the results of communication education fall below expectations and how expertise in communication can be attained by deliberate practice. The deliberate-practice model specifies learning conditions which are insufficiently fulfilled in current communication programs.

Conclusion
The implementation of our recommendations would require a great deal of effort. Therefore we doubt whether expertise in professional communication can be fully attained during medical training.

Practice implications
We propose that the CanMEDS communication competencies not be regarded as endpoints in medical education but as guidelines to improve communication competency through deliberate practice throughout a professional career.

2.1 Introduction

Good communication is acknowledged as essential for practicing physicians. The CanMEDS physician competency framework which is the current standard in medical training, requires expertise in communication for practicing physicians [1]. The framework describes the communication competencies which a physician should master. Almost all medical schools offer communication-skills training in order to prepare their students for the requirements of clinical practice [2,3]. The programs differ in size, learning objectives, and teaching methods. Undergraduate programs used to focus on communication skills of history taking [4], but nowadays students are also taught the skills of explanation and planning [5]. Communication-skills training for residents is less offered [3,6,7].

Although students improve their communication performance in medical school [8-11], they generally do not attain professional expertise in communication [12-14]. They are competent in the communication skills required for civil, social conversation, but the skills which are typical of professional encounters, such as structuring the conversation, building rapport, and handling emotions, are not sufficiently mastered despite the efforts of medical schools to prepare their students for the communication tasks in clinical practice [12]. Postgraduate communication education also has moderate to little effect on the communication competency of residents and senior physicians [15-19]. Furthermore, the effect of communication education on patient outcomes is limited [18,20-24]. Apparently, an expert level of communication competency is difficult to attain.

Several factors complicate the learning of professional communication behavior: (1) when entering medical school students have lifelong experience with communication and they use familiar communication patterns in daily life. From then on they have to learn to communicate professionally, which means that they not only have to learn new behavior, but also have to unlearn familiar patterns; (2) communication competency has substantial content and context specificity [9,25-29]. This means that communication skills learnt in a specific context such as an educational setting, do not generalize easily to other contexts such as clinical practice [19,30-35]; (3) professional communication is determined by professional goals, but also by personal goals, needs, emotions, attitudes, and social standards. Communication is also closely bound to self-image and personality and is influenced by emotional and social maturity in private

and professional life [36]. Changing communication patterns often requires considerable changes in personal views and beliefs for which professional experience and maturation are indispensable; (4) communication is dependent of content. Students and to a lesser extent residents often lack the medical knowledge, problem-solving skills, and clinical experience which are required for effective communication with patients [28]; (5) communication is a fast and ongoing process which leaves hardly any space for interim reflection without hampering the process; and (6) reflection on the effectiveness and efficiency of a conversation is often difficult, since the effects of skill performance are subjectively shaped and the outcomes are often ambiguous, obscure, and determined by other factors besides communication [37].

We searched the literature for a suitable model of patient-physician communication to explain how the complexities influence the learning and performance of professional communication behavior [38-42]. However, since each evaluated model focuses on specific aspects of communication, no model could explain the limited results of communication education by taking into account all mentioned complexities. Thus, we adapted the reflective-impulsive model of social behavior [43] to describe how physicians' communication behavior is controlled and learnt. The reflective-impulsive model is a comprehensive and empirically tested model which integrates cognitive, motivational, and behavioral mechanisms to explain social behavior as a joint function of reflective and impulsive processes. Based on our analysis we offer recommendations for the improvement of the effectiveness of communication education. We substantiate our recommendations in relation to those we found in the literature. We limit ourselves to communication within the scope of encounters with patients and their relatives.

2.2 Learning clinical communication

2.2.1 The reflective-impulsive model

Figure 2.1 presents an adaptation of the reflective-impulsive model [43]. The model contains two parallel systems to control a physician's communication behavior: the reflective system and the impulsive system. Communication signals, such as the communication behavior and

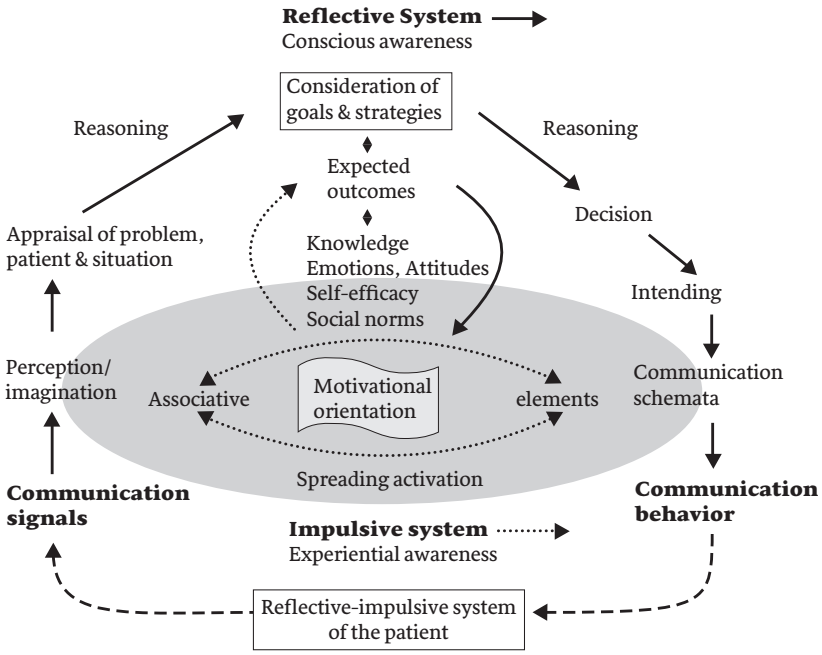

Figure 2.1: The reflective-impulsive model of communication behavior. Adapted from Strack & Deutsch [43].

characteristics of a patient, are either perceived or imagined. The reflective and impulsive systems process these communication signals and elicit communication behavior through different pathways. However, there is a final common pathway through communication schemata to overt behavior.

In the *reflective system*, perceived or imagined communication signals are processed by a conscious reasoning and decision process. The signals are converted into meaningful information by assigning them to semantic categories, such as the designation of a physical complaint or an emotional cue. This information is appraised by further reasoning to establish the problem requiring a communicative response. Reasoning means that syllogistic rules are used for the transfer of truth from premises to a conclusion. The goals and the communication strategies available to attain these goals are then considered. In this reasoning process, other elements, such as expected outcomes, knowledge, emotions, attitudes, self-efficacy, and perceived social norms are also taken into consideration. The model assumes that these elements can be retrieved from the impulsive

system and brought under conscious control. By further reasoning a decision is made which activates appropriate communication schemata through the self-terminating mechanism of intending, such as asking a further question about a complaint or reflecting a perceived emotion.

The *impulsive system* is conceived of as an associative memory network. If one element in this network is activated by a perceived or imagined stimulus, activation spreads to other elements in proportion to the strength of the links between the elements. Links are created if stimuli are presented or activated in close temporal or spatial proximity. These links are quite stable and change only gradually through learning. However, the impulsive system has some flexibility. It can alternate between two distinct motivational orientations to stimuli, that is approach and avoidance, which guide the processing of information and the activation of behavior, such as the choice to address either the physical complaints or the emotions of a patient.

Communication schemata are clusters of links of varying abstractness within the impulsive system. They are the mental representations of communication actions used to select effective and appropriate communication behavior. If a communication schema is activated, either through the reflective system or the impulsive system, the corresponding communication behavior is executed. The patient perceives these communication signals, processes them within his own reflective-impulsive system and sends out new communication signals to the physician.

According to the Action Assembly Model [44], the activation of communication schemata is a two-step process. First, a relatively small subset of schemata relevant to any given situation is activated. Activation depends on the strength of the schema and its relevance to the current situation and goal. Second, the activated schemata are connected in a logical manner to build a coherent structure of thoughts and behavior. These processes demonstrate how thoughts and behavior can be both repetitive by using the same schemata over and over again, yet unique in how schemata are combined and assembled.

There is an asymmetry between the two systems. A stimulus will always be processed by the impulsive system, whereas the reflective system can be disengaged. The impact of a stimulus in the impulsive system depends to a great extent on the strength of the links between the representation of the stimulus and other elements in the system. Furthermore, activation and assembling of communication schemata through the

impulsive system offers significant advantages for communication control, since it operates fast, requires little or no cognitive effort, and has a low threshold for processing incoming information which enables quick responses to subtle communication signals. However, the flexibility of the impulsive system to respond to unfamiliar situations is limited and unlearning familiar, yet ineffective communication patterns takes considerable time and effort.

Depending on its intensity and the attention it receives, a stimulus may also be processed through conscious reasoning and decision in the reflective system. However, conscious reflection requires cognitive effort and time and will inevitably hamper the fluency of the communication process. Conscious reflection is also susceptible to the influence of internal and external factors, such as knowledge, self-efficacy, mood changes, stress, and social pressure. Furthermore, the reflective system operates most efficiently at intermediate levels of arousal, while low and high levels of arousal facilitate well-practiced, dominant responses in the impulsive system. Nuancing in the reflective process is thereby blocked and familiar, but inadequate communication schemata can be triggered. The reflective and impulsive systems can also activate incompatible schemata. Such antagonistic activation can be accompanied by a feeling of unease or even conflict, which diverts attention and hampers the functioning of the reflective system. Familiar schemata activated by the impulsive system will then prevail. These processes explain how feelings of insecurity, powerlessness, aversion or strong sympathy can obstruct the performance of effective communication behavior.

2.2.2. Communication behavior change according to the reflective-impulsive model

Communication schemata and other elements in the impulsive system can change directly without conscious control, but these changes are only achieved by slow associative learning processes guided by trial-and-error in which motivational orientation plays an important role. If communication behavior must be improved or adapted to an unfamiliar situation, conscious reflective processing is more efficient and often essential. Elements present in the impulsive system are placed under conscious control, with the logical relationships between these elements being established through reasoning followed by a decision and the intention to

execute new communication behavior. However, the intention is only temporarily active, meaning that the reflective process has to be repeated until automation of the behavior is achieved. Automation entails robust links in the impulsive system between communication signals and communication schemata being created by frequent practice. A rapid and stable communication response to a new situation is thus acquired.

Communication schemata can be linked to concrete perceptions or experiences, but can also be linked to abstract concepts such as 'breaking bad news' or 'promoting adherence'. Communication schemata can thereby be activated by a wide variety of situations which belong to a specified class of consultations. However, a consultation or part of a consultation must first be associated with the relevant class in the impulsive system before the appropriate schemata are activated and assembled, and the communication behavior is executed. This means that the links between the characteristics of a consultation and a specified class of consultations are as important as the formation of communication schemata for this class of consultations. Therefore, communication behavior which is learnt in a specific context, does not generalize easily to other contexts. A physician would then have to fall back on the reflective system and consciously decide what communication behavior is appropriate for the unfamiliar consultation at hand.

2.2.3. Acquisition of expert performance in clinical communication

In medical education the teaching of clinical communication is usually termed communication-skills training (CST). Communication skills are defined as a physician's discrete and observable verbal and/or non-verbal utterances that contribute to the efficient attainment of a conversational strategy [38]. Communication schemata contain the mental representation of communication skills. The execution of these skills is part of communication behavior.

However, skilled communication requires more than the mastery of communication skills [37]. According to the reflective-impulsive model, learning new communication behavior implies the acquisition of new skills, but also the incorporation of mental representations of these skills in communication schemata and the formation of new links between these schemata and the mental representations of situations in which the

use of the skills and schemata is appropriate. We will use the term communication-skills training in this broader sense.

There are many situations in which a physician must be able to communicate effectively. Thus, the effect of communication education will be limited if the training is restricted to a predetermined set of skills in standardized situations. Instead, communication education should offer ample opportunities to exercise communication skills in a wide variety of realistic situations, provide frequent and concise feedback, and stimulate reflection on the process and outcome of the exercised conversations in order to form the required links in the impulsive system. Ericsson's model of acquisition of expert performance through deliberate practice [45] complements the reflective-impulsive model by elaborating these educational requirements and proved to be useful in studies of clinical reasoning and clinical performance [46]. Therefore, we found this model more suitable for further analysis and recommendations than other models of medical education [47].

The *deliberate-practice* model states that after restricted training and experience an individual's performance is adapted to the typical situational demands. Upon reaching this satisfactory level, performance becomes stable and increasingly automated. Additional experience will not improve behavior and expertise is never attained, since this requires deliberate practice under specific learning conditions. Expertise is defined as the stable superior ability to handle challenging situations effectively and deliberate practice means that individuals purposefully counteract tendencies towards automatism by actively setting new goals and higher performance standards. Stated in terms of the reflective-impulsive model, individuals force themselves to reflect on the situation at hand, to consider goals and strategies, and to decide which skills are appropriate to attain those goals. If the new communication behavior meets the demands of the situation, the behavior becomes automated by further practice. If not, further reflection and correction are necessary.

Based on a review of research into skills acquisition, Ericsson lists the following learning conditions for deliberate practice: (1) learning tasks with well-defined goals, (2) learning tasks of short duration with opportunities for immediate feedback, reflection, and corrections, (3) being motivated to improve, and (4) having ample opportunities for repetition, gradual refinements, and practice in challenging situations. In section 2.3 we will clarify why the learning condition of well-defined goals is not suf-

ficiently fulfilled in medical communication education. Based on this analysis we will present our recommendations for learning objectives. In section 2.4 we will address the other learning conditions. Although assessment of the communication competency of students and residents is important, we will not elaborate further on assessment. Figure 2.2 offers an overview of our recommendations.

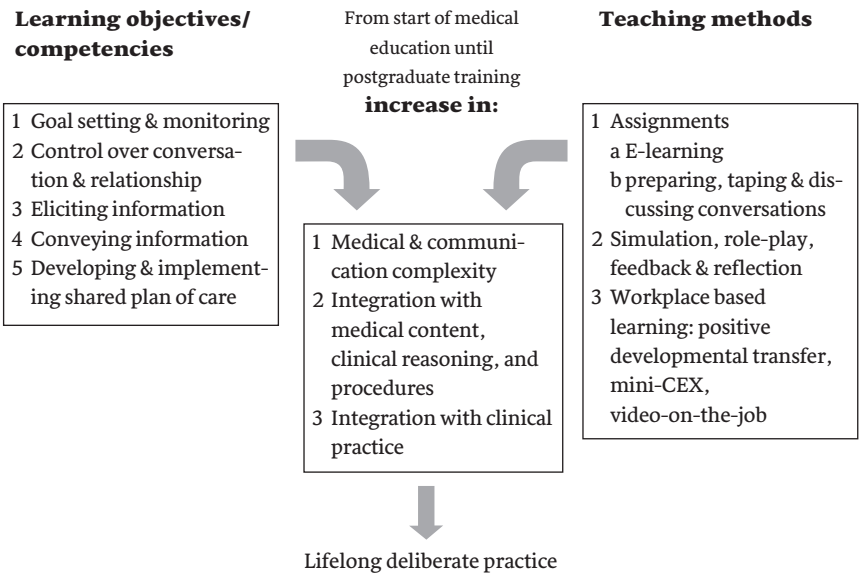

Figure 2.2: Overview of recommendations for learning objectives and teaching methods.

2.3 Learning objectives: Which communication behavior should students and residents learn?

Patient-centeredness is a core concept in the CanMEDS framework [1] and in the guidelines for teaching communication skills [51-55]. However, patient-centeredness is criticized by various authors [34,56-60]. It is a vague and multiform construct with ethical and moral aspects and can almost be considered equivalent to good communication [59]. Since patient-centeredness has been the leading concept for the teaching and assessment of patient-physician communication for decades, learning objectives are usually also based on a consensus about 'good' communication behavior

and formulated in terms of desirable communication behaviors and requirements about the consultation process and about the patient-physician relationship. This would not be a problem, if the positive effects on patient outcomes of these behaviors and requirements are well established. Although some theoretical models clarify the relationship between patient-centered communication and health outcomes [61-63], the evidence of the positive effects of patient-centered communication is limited [64-65]. As a result, the learning objectives of many teaching programs are ambiguous and not evidence-based [66-68]. Thus, we propose more functional learning objectives.

2.3.1 Goal-directed communication

A medical consultation serves to address particular goals of both physician and patient. The physician, being the professional provider of care, is primarily responsible for the attainment of these goals [34,42]. This principle, rather than the concept of patient-centeredness, must guide the formulation of learning objectives. A number of primary goals can be distinguished in a medical consultation [69]: (1) the physician obtains an accurate and comprehensive overview of the reason for the encounter, the medical problem, and the psychological and social factors which relate to the problem; (2) the patient understands the nature of his/her problem and the options for further action with the physician helping the patient digest and accept this information; (3) physician and patient create a shared action plan; (4) physician and patient implement the action plan with the physician supporting the patient in their contribution to implementation; and (5) physician and patient evaluate the action plan and decide on changes to the plan if necessary.

There are also more specific or secondary goals for a consultation, such as collecting information about complaints, reassuring the patient, informing about treatment options or discussing non-adherence. Secondary goals are conceptualized as enabling goals in that they are either necessary or helpful to achieving primary goals [39,40,42,70]. They are part of the strategies to attain the primary goals. However, the distinction between primary and secondary goals is somewhat artificial and several authors consider certain secondary goals essential and therefore as primary goals, such as responding to emotions and fostering the relationship [61]. Furthermore, primary and secondary goals are not applicable in all

consultations and in most consultations there is a shift in goals during the consultation due to changing factors such as the patient's responses [34,42].

The key communication competencies of the CanMEDS framework reflect the primary goals of the medical encounter [1]. Since the CanMEDS framework is the current standard in medical training, we start from its key communication competencies to discuss the following learning objectives: (1) control over the conversation and relationship, (2) eliciting and synthesizing information, (3) conveying information, and (4) developing and implementing a shared plan of care. However, since these learning objectives are formulated in terms of required behaviors, we will in each case link them to the mentioned primary goals of the consultation.

2.3.2 Control over the conversation and relationship

A physician must be aware of his own as well as the patient's primary and secondary goals and direct the consultation towards the attainment of these goals [42,55]. During the consultation she/he must be able to respond flexibly to the shift in goals without losing control over the consultation. However, control does not mean that the patient is a passive contributor to the consultation. On the contrary, cooperation between the physician and the patient is an essential prerequisite to attaining the goals. If necessary, the physician must state the goals explicitly and negotiate them with the patient in order to work with an agreed upon agenda. Good control also implies that the physician promotes and fosters a good relationship with the patient, as formulated by the first key competency of the CanMEDS framework, and invites the patient to actively participate in the conversation [1,55,61,71]. The learning objectives of a communication program should thus include the mastery of the strategies and skills required for control of the consultation process and for building and monitoring rapport [55,72-75].

In daily life, students – like most people – are seldom aware of the shifting goals in their conversations and how to control the attainment of these goals. Students must therefore learn to identify realistic and attainable goals for their professional encounters, to be aware of the goals of the patient, and to adjust the goals during a consultation where necessary. They also have to learn to subsequently reflect on the process and outcome of their professional encounters in order to evaluate the effectiveness of their communication behavior in the attainment of the primary

and secondary goals. Reflection on the process and outcomes of consultations and addressing cognition, emotions, attitudes, and values, with the aim of acquiring appropriate communication schemata, along with skills practice are recommended by many authors as part of communication education [2,3,37,38,42,55,60,76-78].

2.3.3 Eliciting and synthesizing information

Eliciting information from the patient has several functions in a consultation. First, it is the main source of information for the physician to acquire an overview of the reason for the encounter, the medical problem, and the psychological and social factors which relate to this problem. The physician has to synthesize this information to make a diagnosis and propose a further action plan. Second, the physician gains an insight into the patient's comprehension, thoughts, feelings, and consent. Third, listening to the patient helps the patient digest emotionally the information and proposals which the physician provides. Fourth, listening to the patient has a beneficial effect on the relationship, since it provides the patient with the feeling of being heard, understood, and supported. Active or attentive listening is regarded as an essential competency for physicians [55,79-82].

2.3.4 Conveying information

Physicians are legally obliged to inform their patients properly and to guarantee their informed consent for medical operations [83]. Conveying information can also be part of other activities such as introduction, information about the goals and the agenda of the consultation, or amplification of questions, proposals, advices, instructions, or actions. To be effective the physician's explanations should result in patient comprehension and recall of the provided information [55,84].

2.3.5 Developing and implementing a shared plan of care

The development of a shared plan of care is the fourth CanMEDS key communication competency. Surprisingly, the implementation of the plan is not mentioned as part of this competency, though implementation often requires excellent communication in instances where the patient is expected

to contribute substantially. Patient adherence to medical regimes and lifestyle changes is notoriously bad [85-86] and physicians should help their patients adhere better. Accordingly, we propose teaching students and residents not only the communication skills required to develop an action plan, but also those required to support the patient in their part of the implementation of the plan. However, physicians should also know the boundaries of their profession and act accordingly. Therefore, when patient cooperation and adherence is obstructed by psychological problems or psychopathology, a physician without expertise in the field of psychotherapy or psychiatry should refer the patient to a specialist.

A physician can use several influencing techniques to develop and implement a shared plan of care. Influencing means that the physician helps the patient reach a decision, such as consenting to a medical procedure or changing her/his behavior, and act accordingly [84]. Since this behavior takes place after the consultation the physician should also arrange for an evaluation of the behavior and outcomes. As learning objectives for development and implementation of a shared plan of care we propose the mastery of effective influencing techniques such as: (1) advice and instruction, (2) counseling and motivational interviewing, (3) conflict management, and (4) guidance and coaching. Influencing techniques and skills which are effective but also feasible within the context of medical consultations, can be found in the literature [85,87-97].

2.4 Teaching methods: How should students and residents learn clinical communication?

Based on the recommendations of Ericsson [45] and others [2,3,5,17,37,52,67,76-77,98-102] we will briefly discuss three educational approaches which provide the learning conditions to attain the learning objectives stated in the previous sections: (1) assignments, (2) simulation, and (3) workplace-based learning.

2.4.1 Assignments

We could not find any study which evaluated the effectiveness of communication assignments. However, we believe that assignments and student projects can be of value [101], since they could provide learning tasks of

short duration with opportunities for immediate feedback, reflection, and corrections. Assignments could be used to acquire knowledge about clinical communication and skill performance and they are suitable to stimulate goal setting and reflection. E-learning is appropriate for presenting subject material and videoed examples with commentary and assignments for analysis [103-106]. Student projects could focus on the preparation of short conversations with peers, relatives, or obliging patients, carrying out these conversations, and reflecting on them afterwards. These assignments could be made stimulating by using topics interesting to the students, encouraging the students to ask for feedback from their interlocutors, and evaluating the outcomes of these conversations. Audio recording or video recording short conversations with simulated or real patients and using them for feedback and discussion with peers and facilitators would also be instructive. Students should keep a portfolio of the feedback received and of their reflections on the conversations.

2.4.2 Simulation

The most effective teaching methods for communication-skills training are role-play, feedback, and discussion in small group sessions. Didactic approaches and modeling are also used, but appear to be less effective [10,17,76,78,107]. However, small group sessions usually do not provide sufficient opportunities for all participants to repeatedly practice communication skills followed by feedback, reflection, and correction. A communication curriculum should therefore provide sufficient opportunities for all participants to review, refine, and build on existing skills while simultaneously adding in new skills and increasing complexity [52]. These exercises should stimulate the formation of communication schemata for realistic problems in medical consultations and students should practice in simulated medical consultations immediately prior to or early in their direct patient-care experiences to make the contextualization most effective [8,100]. Integration of simulations with the teaching of clinical knowledge, problem-solving, and practical skills could make the teaching of communication more effective and efficient, but also more valued by faculty and students [3,100].

2.4.3 Workplace-based learning

Communication behavior learned in training settings is less competently applied in clinical practice [19,30,31-35]. Two factors are responsible for this lack of transfer. First, according to the reflective-impulsive model transfer to clinical practice will be less effective if the context in which skills are learned differs substantially from the context in which they must be applied. Studies of the content and context specificity of communication skills and studies of the context dependency of expertise development substantiate this assumption [25,27,29,108-109]. Second, to transfer communication competency from medical school to clinical practice, students not only have to learn to use their skills in clinical conversations, but they also have to adapt their learning to the culture of clinical practice, which implies different teaching methods and learning relationships [47]. This developmental transfer is influenced by factors such as mutual expectations, the responsibility and clarity of the assignments given to interns, the quality and frequency of the feedback from senior doctors, role modeling of senior doctors, and the acceptance of interns as members of the team [110]. In clinical practice the inhibiting factors usually dominate the facilitating factors [3,110-114]. This could explain why the quality of students' attitude and communication performance declines when they enter clinical practice [13,115].

The introduction of the CanMEDS framework in medical curricula has encouraged the attention to communication in clinical teaching and workplace-based learning has come into focus. Today, clinical supervisors use mini-clinical evaluation exercises (mini-CEX) and other workplace assessment tools for the formative assessment of and feedback to interns and residents [116]. The feasibility, reliability, and validity of these assessments are promising although the educational effects are less convincing [117]. Video-on-the-job which means videoing outpatient and clinical consultations and discussing them with peers and/or supervisors, is an extension of the mini-CEX and a valuable teaching method for feedback and reflection [113,118-120]. We therefore recommend using video-on-the-job as much as possible as soon as students are given the opportunity to interview real patients, whether prior to or during their internships.

2.5 Conclusion and practice implications

The reflective-impulsive model of communication behavior and the deliberate-practice model explain the limited results of communication education and provide recommendations for the learning objectives and the methods to teach patient-physician communication. We substantiated our recommendations in relation to those we found in the literature. However, the implementation of our recommendations would require a great deal of investment of time, money, and human resources.

Accordingly, we doubt whether expertise in professional communication can be fully attained during medical training. It can probably only be aimed at over a lifelong process of learning through deliberate practice. Furthermore, being a communicator is only one of the six additional roles that a physician must integrate into his role as medical expert. Considering the amount of effort and time required for deliberate practice, it will be hard to implement the learning conditions for all CanMEDS roles in medical curricula and in postgraduate education, even if the teaching of these roles is fully integrated. We therefore propose regarding the CanMEDS communication competencies not as endpoints in medical education but as useful guidelines. Curriculum designers should reflect on the amount of time and effort they want to spend on the teaching of clinical communication and to determine the level of communication competency they find realistic to achieve within these limitations. On this basis they can construct an optimal but also feasible communication program with the aid of the recommendations presented in this paper. Above all, however, they should build a communication curriculum which encourages students and residents to improve their communication behavior through deliberate practice throughout their professional careers.

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Chapter 3

Assessment of physician competency in patient education: Reliability and validity of a model-based instrument

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3.0 Abstract

Objective
To establish the inter-rater reliability and the concept, convergent, and construct validity of an instrument for assessing the competency of physicians in patient education.

Methods
Three raters assessed the quality of patient education in 30 outpatient consultations with the CELI instrument. This instrument is based on a goal-directed model of patient education and assesses distinctive skills for patient education categorized in four subcompetencies. The inter-rater reliability was calculated. The concept validity was explored by factor analysis. The convergent validity was established by a comparison with two measures of patient-centered behavior. The construct validity was explored by relating the subcompetencies with physician gender and patient satisfaction.

Results
The inter-rater reliability for the subcompetencies varied between .65 and .91. The factor analysis distinguished the four subcompetencies. All subcompetencies correlated with the measures of patient-centered behavior. Female physicians performed better than male physicians on three subcompetencies. Positive correlations were found for three subcompetencies and patient satisfaction.

Conclusion
The CELI instrument appears to be a reliable and valid instrument. However, further research is needed to establish the generalizability and construct validity.

Practice implication
The CELI instrument is a useful tool for assessment and feedback in medical education since it assesses the performance of distinctive skills.

3.1 Introduction

Patient education takes place in most medical consultations and is an essential component of the physicians' role as a communicator, as described in the CanMEDS competency framework for the training of physicians [1]. In Groningen, the Netherlands, we offer the residents a compulsory postgraduate communication curriculum which focuses on challenging issues in patient education. By patient education we refer to the use of educational methods, such as the provision of information, advice, and behavior modification techniques, to influence the patients' knowledge, opinions, and health and illness behavior in order to ensure that the patient is able to cooperate effectively in deciding on the care which he receives and can make the best possible contribution to that care [2]. Especially the challenging communication issues which are mentioned in the CanMEDS framework are dealt with in the curriculum, such as obtaining informed consent, breaking bad news, disclosure of error, addressing end-of-life issues, and dealing with misunderstanding, confusion, non-adherence, anger, and conflicts [1]. For this curriculum we needed a reliable and valid assessment instrument.

In the CanMEDS framework as well as in consensus statements about the communication in medical encounters a patient-centered approach is recommended [3,4,5]. However, patient-centeredness is a complex and elusive concept which does not offer a theoretical framework from which the objectives of a consultation can be derived [6,7,8]. The current evidence about a relationship between patient-centered communication and patient outcomes is also limited [9]. Furthermore, most teaching programs that aim to enhance the patient-centered behavior of the participants are obscure or inconsistent in the description of their educational goals and the skills taught, and show incongruity between the teaching objectives and the instruments used to assess the educational effects [10,11,12].

In order to give in to these criticisms of both the concept of patient-centeredness and the existing teaching programs, the first (JW) and fourth (HW) authors developed a goal-directed model of patient education which guided them in the formulation of the teaching objectives for their curriculum and in the construction of an assessment instrument with which they could assess the patient-education competency of the residents, and give them feedback on their performance. This article describes the

so-called CELI model, the CELI assessment instrument, and the results of a study of the reliability and validity of the CELI instrument.

3.1.1 The CELI model of patient education

According to the above definition patient education implies that a physician must not only provide information, but also must help the patient to comprehend and digest the information. Subsequently the physician can help the patient to make a considered decision based on the information, and to adapt his behavior if necessary.

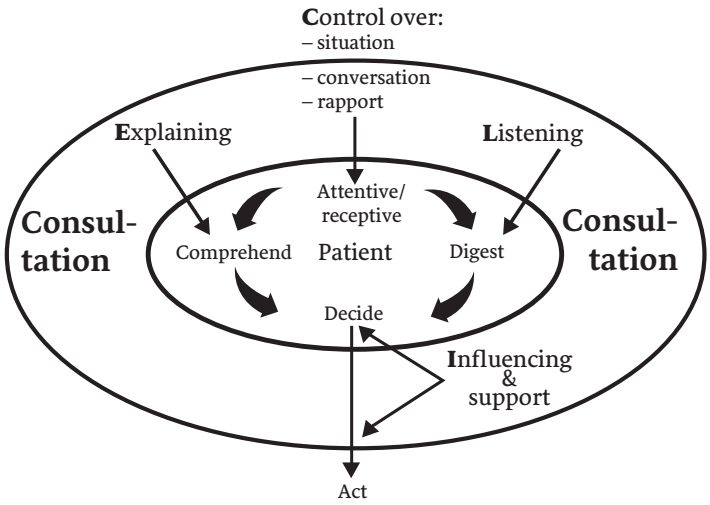

Figure 3.1: The CELI model of patient education.

The inner oval in Figure 3.1 contains the psychological processes which take place in the patient. These are the immediate goals of patient education in a medical consultation. The CELI model which is derived from the classic Yale model of persuasion [13], distinguishes the tasks that a physician has to perform in a consultation in order to reach these goals. The outer oval in Figure 3.1 represents the consultation in which the physician performs these tasks. These tasks and their matching subcompetencies are **C**ontrol, **E**xplaining, **L**istening, and **I**nfluencing, and are clarified below. Appendix 3.1 contains an overview of the distinctive skills of the subcompetencies.

The medical consultation is a meeting with pre-set goals and the physician is primarily responsible for the attainment of these goals. Therefore, the physician must control the conversational flow. However, control does not mean that the patient is a passive contributor to the consultation. On the contrary, good control implies that the physician invites the patient to actively participate in the conversation [5]. The Control task relates to three aspects of the consultation: (1) control over the situation in order to have an undisturbed and private conversation. In Figure 3.1 this control task is positioned outside the consultation since this task must be performed before the consultation starts; (2) governing the conversation in order to reach the pre-set goals [14,15]; and (3) fostering the relationship [5,16]. Control includes activities such as initiating and ending the session, structuring the conversation, building and monitoring rapport, encouraging patient participation and collaboration, and using the available time efficiently.

Effective Explaining results in patients' comprehension and recall of the provided information (cognitive digestion). In order to reach these goals the physician must take the patient's pre-existing knowledge and additional information needs into account. He has to present the information in a structured and intelligible manner, and he has to check regularly patients' understanding [5,17].

By Listening to the feelings and opinions of the patient, the physician encourages the patient to digest the information emotionally. Active or attentive listening is promoted as an important competency for physicians as part of a patient-centered style of communication [3,5,18,19].

Influencing means that the physician helps the patient to reach a decision, such as consenting to a medical procedure or change his behavior, and to act accordingly. In Figure 3.1 acting by the patient is positioned outside the outer oval, since this behavior takes place after the consultation.

Although in some medical-consultation models the function of decision-making is separated from the function of influencing the patients' behavior [16], in the CELI model these functions are considered as an entity [20]. Nowadays, the shared decision-making (SDM) model is promoted as the preferred, patient-centered approach for decisions. Makoul proposed a framework and integrative definition of SDM in which essential and ideal elements, i.e. specific observable behaviors, of SDM are included [21]. According to this model the degree of sharing in the decision process can vary with physicians leading the discussion and making decisions at one

end, patients leading the discussion and making decisions at the other, and truly shared discussion and decision-making in the middle. The nature of SDM will be qualitatively different as encounters depart from the midpoint and the necessary skills of the physician vary accordingly [21]. Sometimes a direct instruction or recommendation is required [22], while at other times a counseling, motivational, or empowering approach is advisable [23]. Occasionally, conflict management skills can be required to influence a patient's decision and behavior [24]. Influencing also includes the support which a physician can offer by entering into clear agreements, establishing a contingency plan, providing decision aids [25], or arranging further professional help.

3.1.2 The context of the CELI model

The CELI model fits in more comprehensive models of the medical consultation [16,26,27,28,29]. According to these models patient, physician, and consultation characteristics determine the quality of the communication between physicians and their patients. This quality in turn determines the outcomes of the consultation. One could therefore expect associations between the performance of the educational skills of the CELI model with determining factors, on the one hand, and with outcomes, on the other.

3.1.3 Purpose of the study

The purpose of this study was to determine the inter-rater reliability, concept validity, convergent validity and construct validity of the CELI instrument, which is described in section 3.2.2.1. To study the convergent and construct validity we took patient-centeredness as a 'gold-standard', since this concept has dominated the medical communication literature for the past twenty years. To establish the convergent validity we compared the CELI instrument with two measures of patient-centeredness, used by Zandbelt et al. [30], i.e. the Patient-centred Behaviour Coding Instrument (PBCI) and the Eurocommunication Scale (ES). These instruments are described in section 3.2.2.2. For the exploration of the construct validity we used the data provided by Zandbelt et al. [31,32]. We decided to focus on two variables which are frequently studied and are fairly consistent related to patient-centered behavior: physician gender as determining factor, and patient satisfaction as outcome variable. Physician gender is one of

the most studied determining factors of physicians' communication behavior [33,34,35]. From her review, Roter [34] concluded that female physicians are more competent in patient-centered communication. Patient satisfaction is a frequently studied outcome of patient-provider communication [9,26,27,36]. Although the literature is not conclusive about the relationship between the communication of physicians and patient satisfaction [9,32], many studies found a positive relationship between patient satisfaction and different elements of patient-centered communication, such as building rapport, information exchange, disclosure of patient concerns, involving the patient in the consultation, and decision-making [9,26,27,36,37,38].

We expected to find:

1 good to excellent inter-rater reliability i.e. $ICC2_{A,1} > .75$ [39], for the CELI subcompetencies, since the CELI instrument assesses observable and distinctive skills in patient education;
2 four distinctive factors resulting from a factor analysis of the mutual correlations of the subcompetencies, which represent the four subcompetencies and support the content validity of the CELI-instrument;
3 support for the convergent validity from the positive correlations between the CELI subcompetencies and the two measures of patient-centered behavior;
4 support for the construct validity from the better performance of the CELI subcompetencies by female physicians and from the positive correlations between the CELI subcompetencies and patient satisfaction with several aspects of the consultation, as described in section 3.2.2.3.

3.2 Methods

3.2.1 Sample and procedures

In their study of patient-centered communication Zandbelt et al. [30] recorded 323 consultations of 30 medical specialists. The recordings were made in the outpatient department of internal medicine of the Academic Medical Center in Amsterdam, the Netherlands. All consultations were coded with the PBCI and the ES. After each consultation the patients completed a short questionnaire about their visit-specific satisfaction.

For each of the 30 participating physicians in the Zandbelt study we selected the consultation with the highest percentage of educational activities. This selection was based on available data about the time spent on different activities during the consultation. The principal investigator (JW) and two psychology students assessed the quality of the patient education in the 30 selected consultations using the CELI instrument. Both students were trained in the use of the instrument by the principal investigator, they had ample experience in the rating procedure within the scope of other research and they were guided by a manual. The raters worked independently and observed each consultation at least twice in order to obtain accurate assessments. They gave preliminary ratings during the first observation and adjusted and completed their ratings during the second observation.

3.2.2 Measurements

3.2.2.1 Competency in patient education: the CELI instrument

The CELI instrument assesses a physician's patient-education competency by assigning scores to the performance of the distinctive communication skills that belong to each of the four subcompetencies. A communication skill is defined as a discrete and observable verbal and/or non-verbal utterance of the physician that contributes to the efficient attainment of the conversational objectives [10]. The performance of a skill is assessed on a four point scale: -2 = poor, -1 = inadequate, +1 = adequate, +2 = good. The skills are evaluated for their intrinsic quality, i.e. how well the skill was performed, and for their contextual quality, i.e. at which moment in the consultation the skill was performed [12]. Every utterance of the physician receives one score for the performance of the skill which the utterance represents. This score consists of the letter of the subcompetency to which the skill belongs, and a performance score. For example, when the physician adequately reflects the feelings of the patient, this utterance is scored L+1, meaning the adequate performance of a listening skill. Depending on the goals and the consultation process, some skills are evaluated frequently, some skills only infrequently, and some skills are not relevant. When the physician does not perform a skill where the performance is advisable, the skill is scored -1 (= advisable) or -2 (= strongly advisable). The rules for these ratings with illustrations are laid down in the manual.

The performance score for a subcompetency is calculated by adding the scores belonging to that subcompetency and dividing the total by the sum of the absolute values of the scores for that subcompetency. This fraction is converted into a *subcompetency score* which varies between 0 (disastrous performance) to 10 (outstanding performance). This range of 0 to 10 is common in the Dutch school system and therefore easy to interpret for Dutch people. A score of 5, which represents an equal number of positive and negative scores, means a mediocre performance of the subcompetency. A score of 6.7 represents twice the number of positive versus negative skill scores and is interpreted as an adequate performance.

The performance score for the overall competency in patient education is obtained by adding the scores of all four subcompetencies, dividing the total by the sum of the absolute values of these scores and converting this fraction score into a *sum score* which varies between 0 (disastrous performance) to 10 (outstanding performance). A sum score of 5 means a mediocre performance of the overall competency in patient education. A sum score of 6.7 means an adequate performance.

The three raters also gave each consultation an *overall mark* for its functional quality, i.e. the effectiveness and efficiency of the educational performance of the physician, varying between 0 (disastrous quality) to 10 (outstanding quality) with 5 (mediocre quality) in between. This overall mark was given after the first observation of a consultation and before the performance scores were counted and the subcompetency scores and sum scores were calculated.

3.2.2.2 Patient-centered behavior of physicians

The Patient-centred Behaviour Coding Instrument (PBCI) measures two dimensions of patient-centered behavior: *Facilitating behavior* which represents the behavior of a physician that aims to elucidate the patients' perspective on illness and treatment, and *Inhibiting behavior* which represents the behavior that restrains the patient from expressing his or her views. Counts of individual facilitating and inhibiting behaviors were weighted according to categorical principal component analysis (CATPCA). For each consultation, the resulting weighted sum scores (z-scores) were used to represent the physicians' facilitative and inhibiting approaches. In the Zandbelt study, the inter-rater reliability coefficients were .92 for facilitating and .53 for inhibiting behavior [30]. The *Eurocommunication Scale* (ES) is a three-item checklist (range 0-1) which assigns global ratings for

the patient-centeredness of a consultation. In the Zandbelt study, the internal reliability (Cronbach's alpha) of the scale was .79 and the inter-rater reliability was .68.

3.2.2.3 Patient satisfaction

A five-item Patient Satisfaction Questionnaire (PSQ) measured patient satisfaction with the following aspects of the consultation: (1) how well needs were addressed, (2) active involvement in the interaction, (3) adequacy of information received, (4) involvement in decision-making, and (5) emotional support received [40]. The items were answered on visual analogue scales (range: 0-100). An *overall satisfaction score* was obtained from principal component analysis of the scores for the five items. This analysis yielded a first component which explained 79 percent of the total variance. Component scores (z-scores) were used as measures of patients' overall satisfaction.

3.2.3 Statistical analyses

1 Inter-rater reliability was assessed by calculating the Intraclass Correlation Coefficients for absolute agreement = $ICC2_{A,1}$ for the three individual raters in a two-way random effects model.
2 Content validity was explored using a principal component analysis with varimax rotation of the correlation matrix of the scores for the CELI subcompetencies and the overall mark.
2 Convergent validity was investigated by correlation analysis of the CELI scores with the PBCI scores and the ES scores, followed by a multiple regression analysis with stepwise introduction of the CELI subcompetencies to predict the values of the two dimensions of the PBCI and the values of the ES.
4 Construct validity was explored through an one-way analysis of variance (ANOVA) of the CELI scores using physician gender as independent variable, and through a correlation analysis of the CELI scores with the scores of the separate items of the PSQ and with the overall-satisfaction score.

All statistical analyses were performed with SPSS 15.0.0 [41].

3.3 Results

3.3.1 Sample characteristics

Table 3.1: Physician, patient, and consultation characteristics.

	Freq. / mean [a]	Perc. / SD [b]
Physician characteristics		
Male / Female	15 / 15	50 / 50
Staff physician / Resident	15 / 15	50 / 50
Mean age (years)	37.8	7.8
Mean years in practice (residency included)	8.6	8.3
Patient characteristics		
Male / Female	13 / 17	43 / 57
Mean age (years)	46.2	13.9
Educational level: lower / middle / higher	15 / 7 / 7	52 / 24 / 24
Acquainted with physician: yes / no	27 / 3	90 / 10
Consultation characteristics		
Subspeciality of Internal Medicine: General / Rheumatology / Gastro-enterology	15 / 5 / 10	50 / 17 / 33
Mean duration of consultation (min.)	13.1	2.5
Mean percentage patient education	**71**	**13**

[a] Frequencies or mean values (N = 30).
[b] Percentages or standard deviations.

The physician, patient, and consultation characteristics of the 30 selected consultations are presented in Table 3.1. In the selected consultations an average of 71 percent of the time was spent on patient education compared with 56 percent in the unselected consultations (N = 292). In the selected consultations the patients were younger, experienced more psychological distress, and were less satisfied with the consultation than the patients in the unselected consultations. The other patient characteristics (male/female ratio, educational level, and acquaintance with the physician) and the mean duration of the consultation were the same in the selected and in the unselected consultations.

3.3.2 Inter-rater reliability

In Table 3.2 the ICC$2_{A,1}$'s of the three raters for each of the four subcompetencies, for the CELI sum score, and for the overall mark are presented.

Table 3.2: Inter-rater reliability coefficients ICC2 $_{A,1}$ and mutual correlations [a] of the CELI subcompetencies.

CELI subcompetencies	ICC2 $_{A,1}$	Conf. Interval (95%)		Bivariate Pearson correlations (N = 30)				
		Upper	Lower	Control	Explain	Listen	Influence	Sum score
Control	0.80	0.67	0.89	1				
Explaining	0.65	0.47	0.80	0.57	1			
Listening	0.91	0.84	0.95	0.56	0.55	1		
Influencing	0.88	0.79	0.93	0.61	0.64	0.47	1	
CELI sum score	0.93	0.88	0.97	0.83	0.77	0.77	0.85	1
Overall mark	0.93	0.88	0.96	0.82	0.79	0.74	0.86	0.99

[a] Bivariate Pearson correlation coefficients. All correlations are significant ($p < 0.01$; N = 30).

The ICC2$_{A,1}$ of the Explaining subcompetency was .65 and the ICC2$_{A,1}$'s of the other subcompetencies were .80 or higher which are adequate reliabilities for research purposes [42]. These values warrant the application of the average CELI scores from the three raters as scores of the CELI subcompetencies in our further analyses.

3.3.3 Concept validity

Table 3.3: Varimax rotated principal components of the CELI subcompetencies and the overall mark.

CELI subcompetencies	Varimax rotated components			
	1	2	3	4
Control	0.31	0.32	0.24	**0.86**
Explaining	0.19	0.28	**0.92**	0.22
Listening	**0.93**	0.21	0.17	0.25
Influencing	0.23	**0.87**	0.30	0.30
Overall mark	0.54	0.56	0.43	0.44
explained variance	1.34	1.30	1.20	1.14
perc. of total variance	26.8	26.0	24.1	22.8

The varimax rotated solution in Table 3.3 of the principal component analysis of the mutual correlations, as presented in Table 3.2, yielded four factors. Each of these factors accounted for approximately the same proportion of variance and represents one of the subcompetencies. The overall mark loaded evenly on each of the four factors.

3.3.4 Convergent validity

Table 3.4: Correlations [a] between CELI subcompetencies and measures of patient-centered behavior.

CELI subcompetencies	Patient-centred behaviour		
	Facilitating	Inhibiting	Euro score
Control	0.38*	-0.55**	0.56**
Explaining	0.40*	-0.24	0.70**
Listening	0.72**	-0.51**	0.58**
Influencing	0.38*	-0.44*	0.67**
CELI sum score	0.53**	-0.57**	0.76**
Overall mark	0.52**	-0.54**	0.80**

[a] Bivariate Pearson correlation coefficients (N = 30).
* indicates a significant correlation at the $p < 0.05$ level.
** indicates a significant correlation at the $p < 0.01$ level.

As shown in Table 3.4, all subcompetencies correlated with Facilitating Behaviour, with the highest correlation for the Listening subcompetency. The correlations between Inhibiting Behaviour and the subcompetencies were all negative, although the correlation with the Explaining subcompetency was not significant. All subcompetencies correlated with the Eurocommunication scores, with the highest correlations for the Explaining and Influencing subcompetencies. The sum score and the overall mark correlated in the expected direction with both dimensions of the PBCI and the ES.

A multiple-regression analysis with stepwise introduction of the scores for the CELI subcompetencies clarified these relations. The Listening subcompetency had the most predictive power for Facilitating behavior ($R^2_{adj} = 0.50$) and the Control subcompetency was the best predictor for Inhibiting behavior ($R^2_{adj} = 0.27$). The other subcompetencies did not contribute further to the prediction of the two PBCI dimensions. The Eurocommunication score was best predicted by the Explaining subcompetency ($R^2_{adj} = 0.46$). The Influencing subcompetency predicted an additional 0.08 (R^2_{adj}) of the variance of the ES scores.

3.3.5 Construct validity

The mean performance scores for the subcompetencies of all physicians varied between 3.85 and 6.64. The results of the ANOVA show that the

female physicians performed better on the Control, Explaining, and Listening subcompetencies. Their CELI sum scores and overall marks were also significantly higher (see Table 3.5).

Table 3.5: Mean scores of the CELI subcompetencies of male physicians and female physicians.

CELI subcompetencies	All (N = 30) Mean (SD) [a]	Male (N = 15) Mean (SD)	Female (N = 15) Mean (SD)	F-value [b] (df = 1;28)
Control	5.24 (2.20)	4.46 (2.08)	6.02 (2.09)	4.20*
Explaining	6.64 (1.52)	6.06 (1.36)	7.22 (1.49)	4.93*
Listening	3.85 (1.83)	3.08 (1.56)	4.62 (179)	6.28*
Influencing	6.54 (1.84)	6.08 (1.89)	7.00 (1.74)	1.95
CELI sum score	5.46 (1.47)	4.87 (1.47)	6.06 (1.24)	5.78*
Overall mark	5.84 (1.54)	5.21 (1.48)	6.47 (1.38)	5.77*

[a] Standard deviations (SD) in parentheses.
[b] F-values for inequality of means (ANOVA).
* indicates a significant correlation at the $p < 0.05$ level.

The correlations in Table 3.6 show that satisfaction with involvement in decision-making (item 4 of the Patient Satisfaction Questionnaire) correlated with the Control, Listening, and Influencing subcompetencies. This item also correlated with the CELI sum score and the overall mark.

Table 3.6: Correlations [a] between CELI subcompetencies and patient satisfaction.

	Patient Satisfaction Questionnaire					Component
CELI subcompetencies	item 1	item 2	item 3	item 4	item 5	score
Control	0.09	0.13	0.20	0.48**	0.12	0.24
Explaining	-0.10	0.17	0.14	0.20	-0.04	0.09
Listening	0.03	0.42*	0.31	0.38*	0.20	0.31
Influencing	0.19	0.40*	0.47**	0.61**	0.30	0.47**
CELI sum score	0.09	0.34	0.36	0.56*	0.22	0.37*
Overall mark	0.09	0.34	0.34	0.53**	0.20	0.36

[a] Bivariate Pearson correlation coefficients.
* indicates a significant correlation at the $p < 0.05$ level.
** indicates a significant correlation at the $p < 0.01$ level.

Satisfaction with involvement in the interaction (item 2) correlated with the Listening and Influencing subcompetencies. Satisfaction with the information received (item 3) correlated with the Influencing subcompetency. Satisfaction with needs addressed (item 1) and satisfaction with emotional support (item 5) did not correlate with any of the subcompe-

tencies. The overall satisfaction score correlated with the Influencing subcompetency and the CELI sum score.

3.4 Discussion and conclusion

3.4.1 Discussion

In this study we investigated the reliability and validity of a model-based instrument to assess residents' and medical specialists' patient-education competency. The CELI instrument assesses distinctive communication skills categorized in four subcompetencies: Control, Explaining, Listening, and Influencing. Thirty outpatient consultations were assessed by three trained raters. The inter-rater reliability of the four subcompetency scores were moderate (.65) to excellent (.91). It appears that with adequate instruction, independent raters are able to agree sufficiently on the quality of the performance of the educational skills corresponding to the four subcompetencies. However, the inter-rater reliability of .65 for the Explaining subcompetency was lower than the reliability of 0.75 and 0.80 recommended by Streiner & Norman [39] and by Nunnaly & Bernstein [42], respectively. One reason for this low reliability appeared to be a systematic bias between the raters, since the Intraclass Correlation Coefficient for consistency between the three raters ($ICC2_{C,1}$) was .70 for this subcompetency. This means that we must critically examine the instruction for assessing the skills of the Explaining subcompetency.

The raters also agreed on the overall mark for the educational quality of the whole consultation. This overall mark correlated strongly with the sum score of the CELI subcompetencies. We conclude that the CELI sum score reflects the overall impression of functional quality, i.e. the effectiveness and efficiency of the patient education performed by the physician, although some rater bias in this overall mark cannot be excluded since this overall mark was given after the first consultation rating. The factor analysis with varimax rotation showed that each of the four subcompetencies contributes evenly to this overall impression. These results support the content validity of the instrument.

The convergent validity of the CELI instrument is indicated by the strong correlations between the CELI subcompetencies and the two dimensions of the Patient-centred Behaviour Coding Instrument and the

Eurocommunication Scale. The Listening subcompetency showed the strongest correlation with Facilitating behavior. This result is in line with our expectation since Facilitating behavior focuses on listening skills. Furthermore, the Control, Listening, and Influencing subcompetencies were negatively related to Inhibiting behavior. Apparently, the CELI instrument measures the quality of some characteristic elements of patient-centeredness [30].

The construct validity of the CELI instrument is supported by the finding of female physicians performing better in three subcompetencies with the greatest difference in the Listening subcompetency which corresponds with the results of other studies [33,34,35]. The construct validity is further supported by the positive correlations between one or more CELI subcompetencies and patient satisfaction with several aspects of the consultation. Patient satisfaction with involvement in decision-making correlated with the overall competency and with three subcompetencies, especially the Influencing subcompetency. This means that the physicians' competency in patient education and especially the competency in involving the patient in the decision which is part of the Influencing subcompetency, matches the evaluation of the decision-making process by the patients. Furthermore, a good performance of listening skills and influencing skills was positively related to patient satisfaction with their involvement in the interaction. However, satisfaction with the information received was not associated with the Explaining subcompetency. This was unexpected since provision of information has been found to be positively related to patient satisfaction [36]. Maybe patient satisfaction with the information as assessed with the PSQ is more determined by the medical content of the information than by the way it is presented which is the focus of the Explaining subcompetency. Furthermore, the two aspects of satisfaction which make an appeal to the listening skills of the physician, i.e. addressing the patients' needs and giving emotional support, did not correlate with the Listening subcompetency. This is also unexpected, since many studies found a positive relationship between the listening skills of physicians and patient satisfaction [5,18,26]. However, Facilitating behavior, which mainly consists of the performance of listening skills, did not correlate either with these two aspects of patient satisfaction. Moreover, Zandbelt found in her study only a small association between Facilitating behavior and patient satisfaction which disappeared in a multivariate model [32].

Since in our study patient satisfaction with the consultation was predominantly associated with the Influencing subcompetency of the physician and only modestly associated with the Control, Explaining and Listening subcompetencies, we conclude that further research into the construct validity of the CELI instrument is needed.

The mean scores of the subcompetencies indicate that the physicians in our study were inadequate in their listening skills, mediocre in their control/rapport skills and adequate in their influencing and explaining skills. These findings correspond to the findings of Aspegren & Lonberg-Madsen [14] who studied the communication skills of senior registrars taking a history and giving information to a simulated patient. The majority of these physicians gave adequate explanations, but less than 50% controlled the conversation adequately, while rapport building and exploring the patients' views and concerns were hardly done. Aspegren's study did not rapport on influencing activities.

3.4.2 Limitations

Although the use of the CELI instrument to assess physicians' patient-education competency is promising, this study has some limitations. First, the educational competency of only 30 physicians working in one university hospital in the Netherlands was assessed. The generalizability of the results of this study to other physicians and situations is therefore limited. Second, in this study we found significant correlations between the CELI subcompetencies and several aspects of patient satisfaction. However, we did not investigate the relationships between the CELI subcompetencies and other patient outcomes, such as comprehension, recall, consent, health beliefs, and adherence. For this reason the support for the construct validity of the CELI instrument is still limited.

3.4.3 Conclusion and practice implications

The CELI instrument appears to be a reliable and valid instrument for the assessment of physician competency in patient education. The instrument is based on a goal-directed model of patient education in medical consultations which matches the CanMEDS competency framework for the training of physicians [1]. Since the instrument assesses the quality of the performance of distinctive skills and yields performance scores for

each of four subcompetencies and for the overall competency in patient education, the CELI instrument can be a valuable tool for feedback and assessment in medical education and in clinical practice.

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Appendix 3.1: The four CELI subcompetencies and their matching skills

C = Control and rapport
- invitational start of the consultation
- summary of the foregoing (resumé)
- agreement upon the goal and subjects of the consultation
- guiding the course of the conversation, keeping to the prescribed conversational structure
- control of patient's attention to the conversation
- control of attention and participation if several interlocutors are present
- summary when changing to a new subject or closing the consultation
- general verbal and nonverbal presentation of genuineness, empathy, care, and competency
- announcing and explaining activities, such as physical examination or writing/typing
- reinforcement of patient behavior which benefits the conversation and relationship
- social conversation in order to show interest in the patient and put the patient at ease
- a clear and friendly completion of the consultation

E = Explaining
- true in content, realistic
- use of clear and comprehensible language (choice of words, short sentences)
- concise and structured with an introduction, sections, and short summaries
- interactive with pauses for reaction, dosed, guided by response - emotional or other
- fitting into the frame of reference of the patient
- convincing, vivid with appealing examples, referring to patient's experiences
- repetition and support with visual aids, leaflets, and internet sites
- checks of comprehension

L = Listening
- verbal and nonverbal attending behavior, encouragements to talk
- use of silence
- paraphrasing
- reflection of feelings and opinions

– asking correct open and closed questions to elicit facts, feelings, and opinions
– obtaining relevant information
– concretizing
– shading and confronting
– summarizing the patient's story

I = Influencing (= instruction, advice, consultation, counseling, deciding, support)
– offering suggestions (and no orders), leaving room for contemplation
– useful and acceptable phrasing of instructions and advice
– reinforcement of patient problem-solving behavior
– realistic presentation of advice, possibilities, promises, and limitations
– taking into account the 'bad news' nature of some information and advice
– counseling, assisting with difficult decisions
– constructive consultation and negotiation
– rephrasing a problem into a shared problem
– promoting the mutual acknowledgement of feelings and opinions
– phasing the decision-making process, offering time for contemplation
– making clear agreements and contingency plans
– checks of approval of suggestions, instructions, advice, decisions, and agreements
– offering educational material (leaflets, internet) and/or useful contact addresses
– offering personal support or professional help after the consultation

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Chapter 4

The communication competency of medical students, residents, and consultants

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4.0 Abstract

Objective
The model of expert performance predicts that neither physicians in training nor experienced physicians will reach an expert level in communication. This study tested this hypothesis.

Methods
Seventy-one students, twenty-five residents and fourteen consultants performed a breaking bad news exercise with a simulated patient. Their communication competency was assessed with the CELI instrument. Actor assessments were also obtained. The differences in communication competency between students, residents, and consultants were established.

Results
The mean performance scores ranged from bad to adequate. An expert level of performance was seldom reached. Novice students scored lower than the other groups in their competency and in the actor assessment. First-year students scored lower than the consultants in their competency and in the actor assessment. No differences in performance were found between third-year students, interns, residents, and consultants.

Conclusion
Students acquire a 'satisfactory' level of communication competency early in the curriculum. Communication courses in the curriculum do not enhance this level. Clinical experience has also a limited effect.

Practice implications
The learning conditions for deliberate practice must be fulfilled in medical curricula and postgraduate training in order to provide medical students and physicians the opportunity to attain an expert level in communication.

4.1 Introduction

The CanMEDS model of medical professionalism which is the current standard in undergraduate and postgraduate medical training, requires an expert level in communication for practicing physicians [1]. Comparable requirements for the communication of physicians can be found in consensus statements and other manuscripts [2-8]. However, the empirical evidence about the effect of communication-skills training is not conclusive. Small to moderate improvements have been found in students' communication competency after one or more communication courses [9-14], but a deterioration in students' communication competency over time has also been reported [15-16]. Postgraduate communication courses also appeared to have positive effects on the communication competency of practicing physicians [9,17-24], but these effects are limited [25-28]. Furthermore, clinical experience has little influence on students' and physicians' communication competency. Students improved their communication competency during their internships [29], but the skills of residents did not change during their residency period [30-31]. Aspegren & Lonberg-Madsen [32] found no effect of clinical experience on the communication competency of experienced physicians. Students in their last year of medical school and senior registrars with little or no training in communication skills performed equally well on communication skills characteristic of social conversation. These skills were learnt spontaneously. However, both groups showed a low degree of professionalism with other important skills, such as structuring the conversation and being responsive to patients' concerns. These communication skills are not learnt despite ten or more years of clinical work.

Ericsson's model of acquisition of expert performance [33] provides an explanation for these limited effects of communication training and clinical experience. Expert performance is defined as a stable superior ability to handle challenging situations effectively. The model states that after restricted training and experience an individual's performance is adapted to the typical situational demands. Upon reaching this 'satisfactory' level the performance becomes stable and increasingly automated. Additional experience will not improve the behavior and expert performance is never reached, since this requires the acquisition of complex integrated systems of representation for the execution, monitoring, planning, and analyses of performance. These complex systems are only acquired from deliberate

practice under specified learning conditions. Based on a review of research on skill acquisition Ericsson [33] lists the following learning conditions: (1) performing learning tasks with well-defined goals, (2) motivated to improve, (3) learning tasks of short duration with opportunities of immediate feedback, reflection, and corrections, and (4) ample opportunities for repetition, gradual refinements, and practice in challenging situations.

Nowadays, almost all medical curricula contain a program for communication-skills training. However, the learning conditions to achieve expert performance are most likely not fulfilled in these curricula. Especially the opportunities for students to review, refine, and build on existing skills, while at the same time adding new skills and increasing complexity, are absent [8]. According to Ericsson's model, students will therefore only attain a 'satisfactory' level in communication competency but not an expert level as required by the CanMEDS framework. The model also predicts that clinical experience alone is not sufficient to reach an expert level. Experienced physicians will therefore have approximately the same communication competency as recently graduated physicians, provided they received approximately the same amount of communication training. If not, the communication competency of experienced physicians will even be inferior, since their clinical experience cannot compensate for their lack of communication training.

In this study we tested these predictions. First, we expected to find a moderate improvement over the years in students' communication competency until they have reached a satisfactory level. Second, we expected to find no effect of clinical experience on the communication competency of residents who received the same amount of communication training as the students. Third, we expected experienced consultants who received hardly any training in communication skills, to have an inferior communication competency compared with interns and residents who received communication training in medical school.

4.2 Methods

4.2.1 Participants and procedure

In a cross-sectional study we compared the communication competency of four groups of students, a group of residents, and a group of consul-

tants at the University Medical Center Groningen (UMCG), the Netherlands. The curriculum of the medical school contains a customary program of several communication courses dispersed throughout the curriculum. The training and experience levels in communication, further denoted as training levels, of the groups were:

Level 1. Novice students (N = 19). These students had just entered medical school. They had not yet received any training in communication skills.

Level 2. First-year students (N = 16). In their first year at medical school these students followed a course in which physician-patient communication was addressed in lectures and small-group teaching. They were also trained in listening skills by means of demonstration and role-play.

Level 3. Third-year students (N = 18). In their second year these students followed training in history taking. In their third year they were trained in patient-education skills. In this course they were also taught about, but not trained in, challenging communication issues, such as handling emotional distress, non-compliance and demanding patients.

Level 4. Fifth-year students/interns (N = 18). These students were now in the second year of their internships in the distinctive specialties. They finished their Bachelor's period in an earlier curriculum than the first- and third-year students. They followed a comparable program in communication skills as the third-year students, except that they were not trained in patient-education skills. They also had some experience in interviewing real patients.

Level 5. Residents (N = 25) in their first or second year of training for different specialties. Although the residents differed somewhat in the amount of communication training they received in medical school, their average training was comparable with the training of the interns. They also had ample experience of clinical and outpatient consultations.

Level 6. Consultants (N = 14) at three departments of the UMCG. These consultants had many years of experience of clinical and outpatient consultations, but they received little or no training in communication skills in medical school or in postgraduate courses.

The 110 participants performed a consultation with a simulated patient in which they had to inform the patient about a disappointing diagnosis and had to agree on a follow-up with the patient. There are two reasons why we found this scenario of breaking bad news particularly suitable for

measuring the communication competency. Breaking bad news is a challenging communication issue that a physician must handle effectively [1]. A physician (in training) who is able to perform a bad news consultation adequately, demonstrates the mastery of a wide variety of communication skills, such as active listening, explaining, planning, support, and staying in control of the conversation and the relationship [7,32]. Secondly, all participants except the novice students were taught the principles and guidelines of breaking bad news. However, none of the participants participated in a skills training in breaking bad news. Thus, for all participants the performance of the bad news consultation was an unfamiliar exercise.

Before the consultation, the participant read a description of the case with information about the patient's background, the diagnostic results, the prognosis, and the treatment options. The participant was also given the opportunity to discuss the medical aspects of the case. In this way we prevented a lack of medical knowledge from interfering with the performance of the communication skills. The students participated voluntarily in the study. For the residents and consultants the exercise was part of a communication course.

Eleven cases relating to different sorts of cancer and progressive chronic diseases, were used for the exercise. Twenty-three experienced actors played the role of the patient. Some actors acted in several cases several times, while other actors acted in one case only once. The cases and actors were randomly divided among the groups of participants. All consultations were registered on video tape.

The principal investigator (JW) and two psychology students assessed the 110 consultations using the CELI instrument which is described below. Both students were trained in the use of the instrument by the principal investigator, they had ample experience in the rating procedure within the scope of other research, and were guided by a manual. The raters worked independently and observed each consultation at least twice in order to obtain accurate assessments. They gave preliminary ratings during the first observation and adjusted and completed their ratings during the second observation. The inter-rater reliability of the scores was checked by calculating the Intraclass Correlation Coefficients for absolute agreement $ICC2_{A,1}$ for the three individual raters [34].

4.2.2 Measurements

The CELI instrument is based on a model of patient education which distinguishes four subcompetencies: Control, Explaining, Listening, and Influencing [35]. The instrument assesses a physician's patient-education competency by assigning scores to the performance of the distinctive communication skills that belong to each of the four subcompetencies. A communication skill is defined as an utterance, i.e. a discrete and observable instance of verbal and/or non-verbal behavior, by which the physician contributes to the efficient attainment of the conversational objectives [36]. The performance of a skill is assessed on a four point scale: -2 = poor, -1 = inadequate, +1 = adequate, +2 = good. The skills are evaluated for their intrinsic quality, i.e. how well the skill was performed, and for their contextual quality, i.e. at which moment in the consultation the skill was performed [26]. Each utterance receives a score for the performance of the skill which the utterance represents. This skill score consists of the letter of the subcompetency to which the skill belongs and a performance score. For example, if the physician adequately reflects the feelings of the patient, this utterance is scored L+1, meaning the adequate performance of a listening skill. The rules for these ratings are set out in an illustrated manual.

From these skill scores four subcompetency scores and an overall competency score are calculated which range from 0 (disastrous performance) to 10 (outstanding performance). This range of 0 to 10 is common in the Dutch school system and therefore easy for Dutch people to interpret. A score of 5, which represents an equal number of positive and negative skill scores, means a mediocre performance of a subcompetency or the overall competency. A score of 6.7 represents twice the number of positive versus negative skill scores and is interpreted as an adequate performance. In an earlier study the inter-rater reliability, convergent validity, and construct validity of the CELI instrument appeared to be satisfactory [35].

In order to cross-validate the CELI scores the actors assessed the quality of the consultation on several aspects immediately after the consultation. This actor assessment yielded a score from the patient's perspective for the quality of the consultation varying between 0 (disastrous quality) to 10 (outstanding quality). Since other studies reported moderate to low relationships between the assessments of trained observers and actor

assessments [37-40], we expected to find a moderate agreement between the CELI scores and the actor assessments.

4.2.3 *Analyses*

1 Intraclass Correlation Coefficients for absolute agreement with participants and raters as random effects in the two-way ANOVA model ($ICC2_{A,1}$=ICCa) were calculated in order to check the inter-rater reliability.
2 Intraclass Correlation Coefficients for absolute agreement ($ICC2_{A,1}$ =ICCa) and for consistency ($ICC2_{C,1}$=ICCc) between the mean CELI scores of the three raters and the actor assessments were calculated in order to cross-validate the CELI assessments and the actor assessments.
3 Univariate analyses of variance were performed for each of the CELI subcompetencies, the overall competency and the actor assessment as dependent variables with the training level (levels 1 - 6) as between-subjects factor. The differences of the means of the CELI subcompetencies, the overall competency and the actor assessment between each pair of training levels were further analyzed with t-tests with Bonferroni adjustments for multiple comparisons.

All statistical analyses were performed with SPSS 15.0.0 [41].

4.3 Results

4.3.1 *Inter-rater reliability of CELI scores*

Table 4.1: Intraclass Correlation Coefficients.

	Three raters	CELI (sub)competencies vs actor assessment	
	$ICC2_{A,1}$	$ICC2_{A,1}$	$ICC2_{C,1}$
CELI subcompetencies	N = 110	N = 92	N = 92
Control	0.759	0.485	0.547
Explaining	0.772	0.456	0.494
Listening	0.828	0.346	0.463
Influencing	0.758	0.443	0.452
Overall competency	0.877	0.507	0.592

$ICC2_{A,1}$ = Intraclass correlation for absolute agreement.
$ICC2_{C,1}$ = Intraclass correlation for consistency.

The first column in Table 4.1 presents the ICCa's of the three raters for each of the four subcompetencies and for the overall competency score. The ICCa's were all above .75, which is the minimal requirement for a useful instrument [34]. In our further analyses we used the mean of the CELI scores of the three raters as scores of the CELI subcompetencies and the overall competency.

4.3.2 Comparison of CELI scores and actor assessment

The ICCa's between the CELI subcompetencies and the actor assessment and between the overall competency and the actor assessment varied between .346 and .507 (Table 4.1, second column). These correlations were calculated for 92 participants only, since we could not register the actor assessments of the 18 interns. The ICCc's between the CELI subcompetencies and the actor assessment and between the overall competency and the actor assessment varied between .452 and .592 (Table 4.1, third column). The slightly higher coefficients for consistency were due to the actors' systematically higher scores for the quality of the consultation compared with the scores for the CELI subcompetencies and the overall competency.

4.3.3 Differences in CELI subcompetencies, overall competency, and actor assessment between students, residents, and consultants

The mean performance scores ranged from 2.56 (= poor performance) for the novice students' Listening skills till 6.99 (= adequate) for the consultants' Control skills (see Table 4.2). The mean overall competency scores ranged from 3.68 (= inadequate) for the novice students till 6.32 (= acceptable) for the consultants. The third row of the training levels 4, 5, and 6 in Table 4.2 show that some interns, residents and consultants obtained a maximum score of 10 for one of the subcompetencies which means that their performance was outstanding in that subcompetency. The highest overall competency score of 8.39 (= good) was obtained by one of the residents. None of the participants received an outstanding mark from the actors.

The univariate analyses of variance (ANOVA) of the four subcompetencies, the overall competency, and the actor assessment as dependent variables and the training level as between-subjects factor yielded a significant effect of the training level for all dependent variables with F-values between 3.98 and 12.68.

Table 4.2: CELI subcompetencies, overall competency, and actor assessment of students, residents, and consultants.

Training / experience level		CELI (sub)competencies					
		Control	Explaining	Listening	Influencing	Overall comp.	Actor assess.
1. Novice students	Mean	3.53	4.10	2.56	4.78	3.68	4.68
N = 19	Std. Error of Mean	0.46	0.36	0.31	0.35	0.27	0.51
	Min / Max	0.48 / 7.53	1.62 / 8.12	0.00 / 4.70	1.03 / 7.07	1.25 / 5.88	2.00 / 9.00
	Differs from level:	3 4 5 6	5 6	2 3 4 5 6	5 6	2 3 4 5 6	3 ? 5 6
2. First-year students	Mean	4.46	5.16	5.04	5.21	5.01	5.31
N = 16	Std. Error of Mean	0.34	0.40	0.38	0.50	0.31	0.39
	Min / Max	2.14 / 6.67	1.27 / 7.36	2.06 / 7.16	0.00 / 8.30	1.75 / 6.85	2.00 / 8.00
	Differs from level:	6		1	6	1 6	5 6
3. Third-year students	Mean	5.20	5.53	5.33	6.01	5.52	6.72
N = 18	Std. Error of Mean	0.45	0.38	0.30	0.37	0.29	0.27
	Min / Max	1.87 / 8.22	1.90 / 8.26	3.04 / 7.61	2.82 / 8.91	2.95 / 7.69	4.00 / 8.00
	Differs from level:	1		1		1	1
4. Interns	Mean	5.87	5.56	6.03	5.79	5.79	?
N = 18	Std. Error of Mean	0.52	0.51	0.33	0.39	0.30	(N = 0)
	Min / Max	2.44 / 9.74	1.94 / 10.00	3.25 / 8.43	3.55 / 10.00	3.98 / 8.22	?
	Differs from level:	1		1		1	?
5. Residents	Mean	5.92	6.14	5.13	6.24	5.76	6.82
N = 25	Std. Error of Mean	0.38	0.31	0.31	0.30	0.24	0.35
	Min / Max	3.02 / 10.00	2.24 / 8.93	1.62 / 7.42	2.25 / 8.37	3.68 / 8.39	2.00 / 9.00
	Differs from level:	1	1	1	1	1	1 2
6. Consultants	Mean	6.99	6.31	5.50	6.90	6.32	7.64
N = 14	Std. Error of Mean	0.43	0.39	0.47	0.21	0.22	0.21
	Min / Max	4.67 / 10.00	3.11 / 8.78	1.25 / 7.78	5.74 / 8.55	4.72 / 8.37	6.50 / 9.00
	Differs from level:	1 2	1	1	1 2	1 2	1 2
Total	Mean	5.31	5.47	4.90	5.81	5.33	6.22
N = 110	Std. Error of Mean	0.20	0.17	0.17	0.16	0.14	0.20
	Min / Max	0.48 / 10.00	1.27 / 10.00	0.00 / 8.43	0.00 / 10.00	1.25 / 8.39	2.00 / 9.00
ANOVA	F =	7.263	4.154	12.681	3.983	11.096	9.494
	p <	0.000	0.002	0.000	0.002	0.000	0.000

Table 4.2 also presents a summary of the t-tests for each pair of training levels with Bonferroni adjustments for multiple comparisons. The fourth row of each training level indicates for each dependent variable whether this training level significantly ($p < 0.05$) differs from the other training level(s). The novice students (level 1) scored significantly lower than the other students for their Listening subcompetency and their overall competency. They also scored lower than the third-year students and interns for the Control subcompetency. Compared with the residents and consultants they scored lower for all dependent variables. The first-year students (level 2) differed from the consultants in the Control and Influencing subcompetencies and in their overall competency. Their actor assessments were lower than those of the residents and the consultants. No differences in performance were found between third-year students, interns, residents, and consultants.

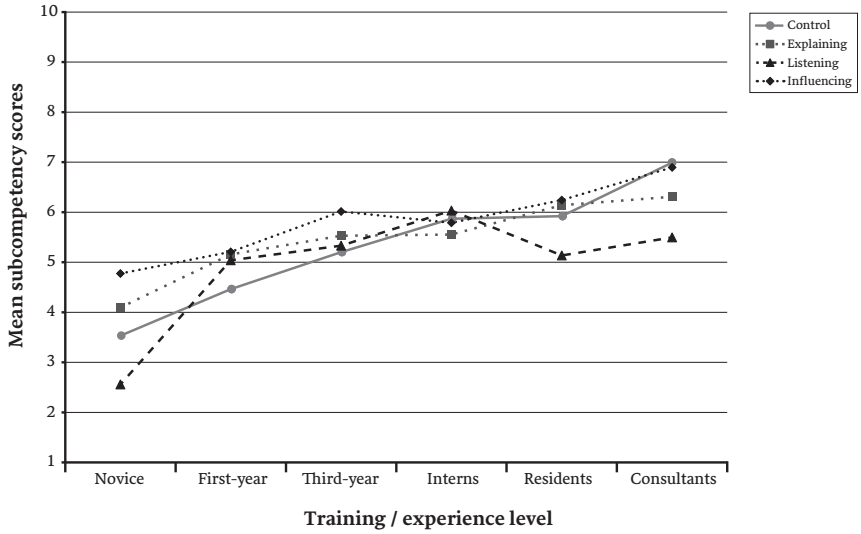

Figure 4.1: CELI subcompetencies of students, residents, and consultants.

Figure 4.1 shows a gradual and linear growth in the Control, Explaining and Influencing subcompetencies over the training levels. The Listening subcompetency had a curvilinear relationship with the training level. Further analyses revealed that the mean scores for the Listening subcompetency of the novice students, the residents, and the consultants were significantly lower than the mean scores for their other subcompetencies.

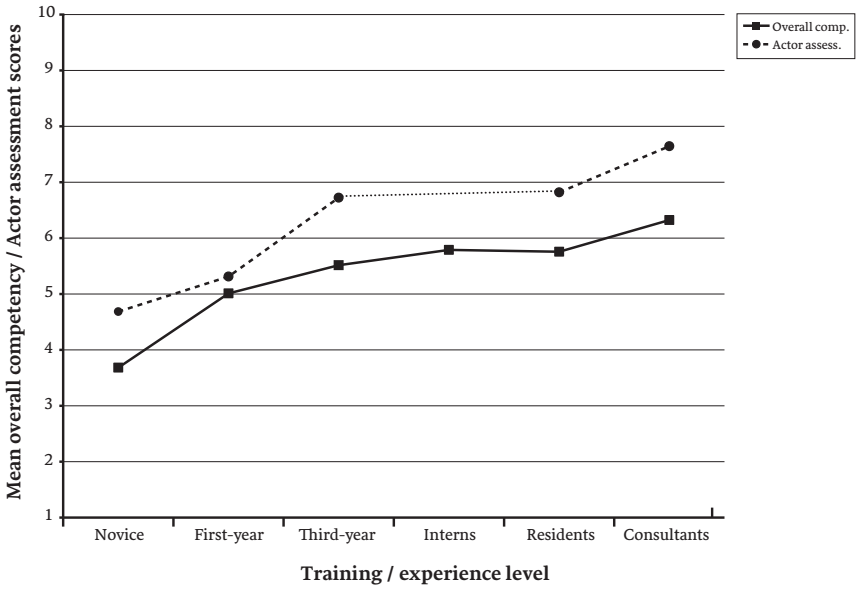

Figure 4.2: Overall competency and actor assessments of students, residents, and consultants.

Figure 4.2 shows a gradual and linear growth in the overall competency and the actor assessment over the training levels with a significantly higher mean score for the actor assessments compared with the overall competency scores for all training levels, except for the first-year students.

4.4 Discussion and conclusion

4.4.1 Discussion

In this study we compared the communication competency and more specifically the competency in patient education of medical students, residents and consultants. All participants performed a consultation in which they had to convey a disappointing diagnosis to a simulated patient. Their communication competency was established by three raters with the CELI instrument, which distinguishes four subcompetencies in patient education: Control, Explaining, Listening, and Influencing. The scores for these subcompetencies and for the overall competency were calculated and the actor assessment was also established.

Our results indicate that the effect of successive communication courses in a curriculum on the communication competency of students is limited. The novice students who received no communication skills training at all had inferior Control and Listening subcompetencies and overall competency than the third-year students and interns. However, they performed equally well in their Explaining and Influencing subcompetencies as the other students.

The first-year students had a better Listening subcompetency than the novice students, which is in line with our expectations, since these students were trained in listening skills in their first-year communication course. The first- and third-year students and the interns performed equally well in all CELI subcompetencies and overall competency. Their actor assessments were also the same. This finding is contrary to our expectations, since the third-year students and the interns followed additional communication courses in their second, third and fourth year. The third-year students in particular were taught supplementary skills for patient education, such as explaining and influencing. Apparently, these skills did not sink in.

The residents who received the same amount of communication training as the interns performed equally well on their subcompetencies and overall competency as the first- and third-year students and the interns. Only their actor assessments were higher than those of the first-year students. As we expected, the clinical experience of the residents had no effect on their communication competency. There even seems to be a decline in their listening skills, since their Listening subcompetency was significantly lower than their other subcompetencies.

Although we presumed that the clinical experience of the consultants would not compensate for their lack of communications skills training in medical school, their clinical experience appeared to have a positive effect on their communication competency. Their subcompetencies and overall competency were equal to those of the senior students and residents. They apparently succeeded in upgrading their communication competency in clinical practice to the same level as the senior students and residents. Their clinical experience had the least positive effect on their Listening subcompetency, because this subcompetency was significantly lower than their other subcompetencies. However, their Control and Influencing subcompetencies were better than those of the first-year students. It is interesting to note that the Control and Influencing skills receive less attention than the Listening and Explaining skills in most medical curricula.

We conclude that the communication skills of students improved in their first year to a level which their teachers apparently consider satisfactory. This satisfactory level was also demonstrated by the students of higher years and the residents. The residents' clinical experience did not add to their competency. The consultants were also able to reach the same satisfactory level with their clinical practice. However, an expert level of performance as required by the CanMEDS framework, was not achieved. These findings are in line with the findings of Aspegren & Lonberg-Madsen [32] and correspond with Ericsson's model [33]. The model states that expert levels of performance can only be achieved by deliberate practice in specified learning conditions. From Ericsson's review [33] and the recommendations of others [4,5,7,8,26,32,42-46] the following learning conditions can be formulated for communication skills training: (1) clear and comprehensive objectives about which skills have to be learned and how to teach them in simulated consultations, (2) stimulating learning tasks of short duration with opportunities for immediate feedback, reflection, and corrections, (3) ample opportunities for repetition and gradual refinements of performance, (4) possibilities for individual students to rehearse their existing skills frequently in different sorts of consultations and to acquire new skills in challenging consultations of an increasing complexity, and (5) transfer of the learned skills into real life consultations / clinical practice. These learning conditions are apparently not fulfilled in medical curricula and postgraduate training.

The inter-rater reliability of the CELI instrument was adequate and corresponded with the reliability in our earlier study [35]. As expected, the agreement between the actor assessments and the CELI subcompetencies and overall competency was moderate. The actor assessments were also systematically higher than the overall competency scores for all training levels except for the first-year students. We conclude that the actors evaluated not only the communication skills but also other aspects of the behavior and general appearance of the participants. From our data we could not discover the nature of these other aspects that led to the higher assessment by the actors.

4.4.2 Limitations

The internal and external validity of this study is compromised by several factors. We did a cross-sectional study instead of a longitudinal study with

small groups of students, residents and consultants. The participants were not compared with themselves over the years and no control groups were used.

All students followed the same curriculum. This could jeopardize the generalizability of our results. However, this curriculum contains a customary, representative program of communication-skills training. The educational background of the residents and consultants was mixed, but typical of the background of specialist physicians.

The students participated voluntarily, while the residents and consultants performed the breaking bad news exercise as part of a compulsory communication course. This could mean that the participating students were more interested in communication and therefore performed better than the 'average' students of their group.

The performance of all participants could also have been influenced by the fact that the exercise was unfamiliar for them. This was especially the case for the students, since the residents and consultants already performed bad news consultations in clinical practice. Furthermore, the students lacked the medical knowledge and clinical experience of the case, although we tried to compensate for this deficiency by giving them medical information about the case and the opportunity to discuss the case. However, our results do not indicate a substantial effect of this advantage on the residents' and consultants' communication competency.

4.4.3 Conclusion

Students acquire a satisfactory level of communication competency in a medical curriculum which contains several communication courses dispersed throughout the curriculum. However, this level is already reached early on in the curriculum and does not increase substantially in later years. Furthermore, clinical experience has a limited effect on the communication competency of physicians. Residents with ample clinical experience do not perform better than interns. However, consultants are able to reach the same satisfactory level of performance as the residents and senior students despite their lack of communication skills training in medical school.

Although some individual students and physicians reached an outstanding level of performance in a single subcompetency, the mean performance of students and physicians does not exceed the level of

performance which is presumably regarded as satisfactory by their teachers and colleagues. We think that the majority of them will remain at this 'satisfactory' level of competency, unless the learning conditions for achieving an expert level of performance are fulfilled.

4.4.4 Practice implications

In order to realize the learning conditions for deliberate practice the teaching of communication has to change from a minority sport to a mainstream activity in medical schools and postgraduate education [8]. Several authors give suggestions how to achieve this goal [6,8,42-47]. Further research could focus on whether the communication competency of students and residents will grow to an expert level when the learning conditions for deliberate practice are eventually fulfilled.

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Chapter 5

Inconsistency of residents' communication performance in challenging consultations

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5.0 Abstract

Objective
Communication performance inconsistency between consultations is usually regarded as a measurement error that jeopardizes the reliability of assessments. However, inconsistency is an important phenomenon, since it indicates that physicians' communication may be below standard in some consultations.

Methods
Fifty residents performed two challenging consultations. Residents' communication competency was assessed with the CELI instrument. Residents' background in communication-skills training (CST) was also established. We used multilevel analysis to explore communication performance inconsistency between the two consultations. We also established the relationships between inconsistency and average performance quality, the type of consultation, and CST background.

Results
Inconsistency accounted for 45.5% of variance in residents' communication performance. Inconsistency was dependent on the type of consultation. The effect of CST background on performance quality was case-specific. Inconsistency and average performance quality were related for those consultation combinations dissimilar in goals, structure, and required skills. CST background had no effect on inconsistency.

Conclusion
Physician communication performance should be of high quality, but also consistent regardless of the type and complexity of the consultation.

Practice implications
In order to improve performance quality and reduce performance inconsistency, communication education should offer ample opportunities to practice a wide variety of challenging consultations.

5.1 Introduction

In medical education, curricular development is nowadays guided by competency-based frameworks such as the CanMEDS competency framework [1]. The CanMEDS competency framework specifies the professional competencies, organized around seven roles, that a physician should master. Communicator is one of these roles. As a communicator, a physician should demonstrate superior communication performance in all consultations regardless of the type and complexity of the consultations. Thus, a physician should be able to effectively address challenging communication issues, such as dealing with non-adherence, breaking bad news, addressing anger, confusion or misunderstanding, and discussing end-of-life issues. Furthermore, performance variability should be restricted. Otherwise, performance quality could drop below standard in some consultations, and patients might suffer from physicians' inferior communication performance.

Communication skills programs aim to provide students and residents with basic communication skills and with advanced skills required for dealing with challenging issues [2,3]. The programs assume that trainees acquire a generic set of communication skills that they can apply in a wide variety of consultations. However, inconsistency appears to be a major source of score variability when students or graduate physicians are assessed on communication performance in more than one consultation, such as in an Objective Structured Clinical Examination (OSCE). One review reported a mean reliability coefficient alpha, corrected for sample size and number of stations, of 0.55 for communication-skills assessments across OSCE stations [4]. Thus, almost half of the variance was not related to differences in performance among candidates. This variance is usually regarded as inevitable error variance, which jeopardizes the reliability and validity of the assessment [5-14]. Generalizability analysis is often used to determine the number of cases, raters, and items required to obtain a reliable performance quality estimate, and a generalizability coefficient of 0.80 is regarded as sufficient [8,12,15-18]. However, generalizability coefficients represent the *average* measurement precision for a set of scores, while variability in candidate performance between cases is neglected [19].

In a proper assessment procedure and score analysis, the error variance can be dissected into variance components which represent the various sources of error [9]. Although some authors use the term case-

specificity to denote all error variance tied to cases, here case-specificity refers to the variation in a single subject's performance between cases and is reflected by the subject-by-case-interaction variance. Depending on the assumptions about its origin, the terms content-specificity, context-specificity, or domain-specificity have also been used to denote this variance component [4-6,8,11-13,16,19-23]. Case-specificity appears to substantially contribute to error variance and is regarded as the main cause of unreliability, outweighing all other sources of bias [11,12]. Although case-specificity indicates performance inconsistency, the degree of inconsistency cannot be established properly, if rater error and other error factors are nested within cases. In that case, the subject-by-case-interaction variance component contains error sources other than performance inconsistency [9]. We found two studies in which rater error and other error sources were reasonably controlled for. In a 14-station OSCE the subject-by-case-interaction variance was 45% [5], and in a study in which a group of students was tested on the same bad news consultation twice in a one-year period (before and after graduation), the subject-by-case-interaction variance was 39% [8].

Several studies have addressed the problem of communication performance inconsistency [4,5,7,8,13,14,16,19,21,24-28]. Some authors claim the existence of a set of generic or transferable communication skills that show a high level of stability and are applicable to a wide range of encounters [14,25,26,29,30]. Others have demonstrated the existence of both generalizable and case-specific skills [13,31]. However, Hodges et al. concluded that there is no homogeneous set of communication skills and that performance depends heavily on the type of the encounter [21]. Some authors have even concluded that communication skills are too case-specific to be assessed in different cases with the same instrument [5,16]. Furthermore, the properties of the assessment instruments also seem to play a role, with global-rating scales tending to pick up aspects of communication competency that are more generalizable across different contexts [17,32-34].

Various sources of communication performance inconsistency have been suggested. According to some authors, inconsistency is largely due to differences in content skills (what the physician communicates) and rarely due to process skills (how the physician communicates) [5,8]. However, Thomson concluded that inconsistency was not merely a content problem, as he provided his candidates with all the essential knowledge relevant to the case problem in order to control for content influences [27].

Hodges et al. hypothesized that, in complex cases, inconsistency would be relatively less prominent since the variance in performance between candidates would be larger, but his study did not confirm this hypothesis [21]. Consultation and patient characteristics are also of interest. Hodges' conclusion that performance depends heavily on the type of encounter could imply that communication performance inconsistency would be larger when consultations are less alike in goals, medical content, structure, and context. The Reinders et al. study, in which larger communication score variability between cases was found in dissimilar, simulated-patient consultations of moderate complexity than in regular real-patient consultations, substantiates this hypothesis [35]. Finally, Raymond et al. found a inverse relationship between average scores and score variability between consultations [19]. Because statistical mechanisms such as the ceiling effect, floor effect, and regression could not explain this relationship completely, Raymond et al. suggested that higher average competency is related to lower performance inconsistency, as high scoring examinees remain more proficient across various types of case and are therefore less variable in performance. Although Raymond et al. did not investigate this hypothesis further, the hypothesis might be interesting since many studies have demonstrated a positive relationship between the amount of communication-skills training (CST) a physician has received and average performance quality [36-38]. Thus, Raymond's hypothesis also predicts a inverse relationship between performance inconsistency and the amount of CST a physician has received.

In this study, we considered communication performance inconsistency to be a phenomenon worthy of investigation rather than only a measurement error. Our study was intended to determine: (1) the magnitude of residents' performance inconsistency in challenging simulated consultations, (2) the relationship between residents' performance inconsistency and the type of challenging consultations, with less inconsistency expected between cases that are more similar in conversational goals, structure, and required skills, (3) the relationship between residents' performance inconsistency and residents' average performance quality, and (4) the relationship between residents' performance inconsistency and residents' background in communication-skills training.

5.2 Methods

5.2.1 Sample and procedure

Our data originated from a collection of 565 videotaped simulated consultations, performed as part of a compulsory program in communication-skills training for residents of several medical specialties. The program builds on the communication-skills training that the residents received as medical students, and contains two days in the first year of residency training - with an approximate interval of three months - and one day in each of the following years. The topics of the first day are breaking bad news (BBN) and negotiating with a demanding patient or relative (NEG). The topics of the second day are requesting post-mortem and tissue donation from a relative (PMD), and discussing treatment restrictions with a relative who demands maximum care (DTR). The BBN and PMD consultations are quite similar in goals, structure, and required skills. In these consultations the physician confronts the patient or relative with a serious illness or the death of a loved one, and should then pay ample attention to the emotions evoked. Discussion of options should take place in the second half of the consultation or in a follow-up consultation. The NEG and DTR consultations are also quite similar in goals, structure, and required skills. In these consultations the handling of emotions is also important, but negotiating takes a more prominent place than in the BBN and PMD consultations.

The topics are dealt with in small group sessions with discussions of clinical experiences, short instructions, role-play with trained actors, feedback, and reflection. The simulated consultations are based on scenarios that encompass the communication problems of the topic. The scenarios relate to the residents' clinical experiences and are constructed with the help of experienced consultants. Before the role-play exercise, the residents discuss the medical information and their own clinical experience with the scenario. This procedure is intended to eliminate as much as possible the influence on communication performance of case difficulty and knowledge about and familiarity with the cases. In the simulated consultations, trained actors play the role of the patient or relative. The actors' appearance is based on suitability for the scenario and availability. However, the residents do not meet the same actor twice, which means that the patient or relative is never familiar to them. The simulated con-

sultations take place in a separate room that is fitted out as an authentic consulting room. Thus, contextual variables are the same for all consultations. All consultations are videoed for feedback purposes.

From our collection of 248 videoed consultations, performed on the first day of training, we selected a random sample of 50 consultations, consisting of 29 BBN consultations and 21 NEG consultations. The 50 residents (35 male, 15 female) who performed these consultations, subsequently performed a PMD or DTR consultation on the second day of training. Thus, we used 100 consultations in this study. Which type of consultation each resident performed on the second day was determined by chance. Twenty-two (6 male, 16 female) actors appeared as simulated patients or relatives in the 100 consultations selected. Some actors portrayed several scenarios several times, while other actors appeared only once. Table 5.1 gives an overview of the consultations. The number of actors employed in each of the four consultation types is presented in brackets.

Table 5.1: Cross-table of consultations performed by 50 residents.

Second consultation	First consultation		
	BBN (7) [a]	NEG (10) [a]	Total
PMD (5) [a]	20	12	32
NTBR (11) [a]	9	9	18
Total	29	21	50

[a] The number of actors used in each type of consultation, is presented in brackets.

5.2.2 Measurements

5.2.2.1 Communication competency

The principal investigator (JW) and two psychology students assessed the residents' patient-education competency using the CELI instrument [39]. This instrument is based on a validated model of patient education and assesses the quality of a physician's patient-education competency by assigning scores to the performance of distinct communication skills. A communication skill is defined as a discrete and observable instance of verbal and/or non-verbal behavior (= utterance) by which the physician contributes to the efficient attainment of the conversational objectives [40]. The skills are grouped into four functional categories: (1) control of

the conversation and fostering the relationship, (2) explaining, (3) listening, and (4) influencing.

The performance of a skill is assessed on a four-point scale: -2 = poor, -1 = inadequate, +1 = adequate, +2 = good. The skills are evaluated for their intrinsic quality, that is, how well the skill was performed, and for their contextual quality, that is, at what moment in the consultation the skill was performed [41]. The rules for these ratings are set out in an illustrated manual. A CELI score (variable *Score*) is calculated from the skill scores of each consultation. The CELI score ranges from 0 (disastrous performance) to 10 (outstanding performance). A score of 5.0 represents an equal number of positive and negative skill scores, and is interpreted as a mediocre performance of communication skills in the consultation. A score of 6.7 represents twice the number of positive versus negative skill scores and is interpreted as an adequate performance. The CELI instrument has good interrater reliability, convergent validity, and construct validity [39,42]. The three raters worked independently and observed each consultation at least twice in order to obtain accurate assessments. This procedure minimized assessment unreliability.

5.2.2.2 Consultations

In our analyses the variable *Consultation* distinguishes between the first (value 1) and second consultation (value 2) performed by the residents. To distinguish between consultation combinations that are similar or dissimilar in structure and required skills, we used the dummy variables *Similar* (BBN-PMD and NEG-DTR) and *Dissimilar* (NEG-PMD and BBN-DTR).

5.2.2.3 Residents' background in communication-skills training

Residents' education in communication skills before graduation was established before they participated in the CST program. We distinguished three categories of the variable *CST background*: -1 = limited education in physician-patient communication (lectures, group discussion), but no genuine communication skills training; 0 = average communication skills training with role-play in history-taking, but limited education in patient education and challenging topics; and 1 = extensive communication-skills training with role-play in history-taking, patient education, and challenging consultations.

5.2.3 Analyses

We built and tested multilevel regression models to explain the variance in CELI scores. A multilevel analysis takes into account the multilevel structure of the data and provides parameter estimates of intercepts and random slopes of the regression model [43]. We built models with three levels (raters, consultations, residents) for the scores of all consultation combinations together, for the scores of the similar consultation combinations, and for the scores of the dissimilar consultation combinations. We were especially interested in the random slopes variance for residents over consultations. This variance component is comparable to the subject-by-case-interaction variance in a generalizability study and indicates the residents' performance inconsistency. By standardizing the random slopes variance, we calculated an *Inconsistency Coefficient* for scores between the first and second consultations.

From the multilevel regression equations, we estimated the residents' CELI scores of the first and second consultations that were not influenced by error components such as rater unreliability. From these estimated scores, we calculated the average score of and the score differences between the first and second consultations for each resident. We used the absolute value of the scores' differences as *Inconsistency* scores of the residents. Since the inconsistency scores were not normally distributed, we used non-parametric tests for further analyses of this variable. We calculated Spearman correlation coefficients between the inconsistency scores and the average scores, and tested the differences in inconsistency scores between the similar and dissimilar consultation combinations with Mann-Whitney U tests. We used ANOVA analyses to establish the effect of CST background on the estimated CELI scores and we used Mann-Whitney U tests to establish the effect of CST background on inconsistency scores.

Appendix 5.1 contains the three-level model and explains the symbols used in the model. Appendix 5.1 also contains the formulas used to calculate additional means, variances, covariances, and coefficients from the parameter estimates of the multilevel analyses. We used MLwiN 2.26 [44] for the multilevel analyses and IBM SPSS Statistics 20 [45] for the additional analyses.

5.3 Results

Table 5.2 contains the parameter estimates of the three-level models for the prediction of CELI scores for all consultation combinations, and for the similar and dissimilar consultation combinations. Table 5.2 also contains the variance components, inconsistency coefficients, and correlation coefficients derived from the models.

Table 5.2: Multilevel estimates, variance components, and coefficients.

Estimated means [a]	All consultation combinations N = 50	Similar consultations N = 29	Dissimilar consultations N = 21
$\mu_{consult-1}$	5.93 (0.179)	6.01 (0.247)	5.81 (0.261)
$\mu_{consult-2}$	6.13 (0.160)	5.98 (0.231)	6.34 (0.206)
μ_0	6.03 (0.148)	6.00 (0.218)	6.07 (0.140)
μ_{dif}	0.207 (0.167)	0.030 (0.265)	-0.533 (0.347)
$\mu_{inconsist}$	0.948 (0.100)	0.782 (0.112)	1.174 (0.146)
Estimated variances [a]			
$\sigma^2_{consult-1}$	1.604	1.735	1.401
$\sigma^2_{consult-2}$	1.274	1.519	0.861
σ^2_0	1.090	1.372	0.566
σ^2_{dif}	1.398	1.020	1.742
$\sigma^2_{inconsist}$	0.499	0.364	0.619
Variance components [b]			
$\sigma^2_{residents}$	0.740 (48.1%)	1.117 (65.1%)	0.260 (20.1%)
$\sigma^2_{resid\ x\ consult}$	0.699 (45.5%)	0.510 (29.7%)	0.871 (67.5%)
$\sigma^2_{consultations}$	0.011 (0.7%)	0.000 (0.0%)	0.071 (5.5%)
σ^2_{error}	0.088 (5.7%)	0.089 (5.2%)	0.089 (6.9%)
σ^2_{total}	1.538 (100%)	1.716 (100%)	1.291 (100%)
Coefficients			
$R^2_{inconsist}$ [c]	0.482	0.313	0.725
$R_{0,\ inconsist}$ [d]	-0.044	0.111	-0.538*

Appendix 5.1 contains the clarification of symbols, notations, and formulas.

[a] Estimated means and variances derived from multilevel coefficients. Standard errors of measurement in brackets.

[b] Variance components derived from multilevel coefficients with percentages in brackets.

[c] $R^2_{inconsist}$ is a variance proportion.

[d] $R_{0,\ inconsist}$ is a Spearman correlation between the estimated mean score of both consultations and the inconsistency score.

* Significance of coefficient indicated by $p < 0.05$.

The CELI scores were normally distributed. The overall mean of estimated scores (μ_0) for all consultations was 6.03, which means that the average communication performance was less than adequate (= 6.7). The mean scores for the first and second consultations did not differ, as indicated by the non-significant mean of difference scores (μ_{dif}) of 0.207 (0.167). The mean inconsistency score ($\mu_{inconsist}$) for all consultations was 0.948. The standard deviation of score differences between the two consultations (σ_{dif}) was 1.18 score points, illustrating the extent of the inconsistency. The normal curve areas indicate that 28% of the residents with a score of 6.7 (= adequate) in one of the consultations would have a score of 6.0 (= moderate) or lower, and 7.5% would have a score of 5.0 (= mediocre) or lower in the other consultation.

The variance components of all consultation combinations in Table 5.2 show that 5.7% was error variance (σ^2_{error}), which includes the variance due to rater unreliability. The calculation of the Intraclass Correlation Coefficient for absolute agreement between raters yielded an $ICC2_{A,1}$ of 0.943, which indicates excellent interrater reliability. 48.1% of the variance can be attributed to score differences between residents, while 45.5% is attributable to score differences between consultations. This variance component represents genuine residents-by-consultation-interaction variance. The inconsistency coefficient for all consultation combinations was 0.482. The correlation between the average score of the first and second consultations and the inconsistency score ($R_{0,\ inconsist}$) was almost zero (-0.044) for all consultation combinations.

The mean of score differences between the first and second consultations, indicated by μ_{dif}, did not differ between the similar and dissimilar consultation combinations (0.030 and -0.533, $t = 1.31$, $df = 48$, $p > 0.05$). However, the distributions of inconsistency scores differed significantly between the similar and dissimilar consultations (Mann-Whitney U test, $p < 0.05$). The variance components also differed significantly between the similar and dissimilar consultation combinations. In the similar consultation combinations, the major proportion of variance (65.1%) was linked to differences between residents ($\sigma^2_{residents}$), while in the dissimilar consultation combinations, the major proportion of the variance (67.5%) was linked to differences in residents' performance between consultations ($\sigma^2_{resid\ x\ consult}$). Thus, the inconsistency coefficients ($R^2_{inconsist}$) of the similar and dissimilar consultation combinations were also different ($F = 16.41$, $p < 0.01$). The Spearman correlation coefficient between the

average score of the first and second consultations and the inconsistency scores (R_0, inconsist) was significant for the dissimilar consultation combinations (-0.538), but not for the similar consultation combinations (0.111).

Table 5.3: Effect sizes (η^2) of CST background on estimated scores of consultations with F-tests for significance (ANOVA).

	All consultation combinations [a] N = 50	BBN consultations N = 29	NEG consultations N = 21	PMD consultations N = 32	DTR consultations N = 18
η^2	0.243	0.433	0.057	0.209	0.052
F-value (df_1; df_2) [b]	7.53 (2; 47)**	9.93 (2; 26)**	0.54 (2; 18)	3.83 (2; 29)*	0.41 (2; 15)

[a] Effect of CST background on average scores of both consultations.
[b] Significance of F-test is indicated by * = $p < 0.05$ or ** = $p < 0.01$.

CST background had a significant effect on the average scores of all consultation combinations (Table 5.3, $\eta^2 = 0.243$, $F = 7.53$, $p < 0.01$). However, the CST background effect was only present in the BBN consultations ($\eta^2 = 0.433$, $F = 9.93$, $p < 0.01$) and in the PMD consultations ($\eta^2 = 0.209$, $F = 3.83$, $p < 0.05$). CST background had no effect on the performance in the other consultations and had no effect on the inconsistency scores in any of the consultation combinations (Mann-Whitney U tests).

5.4 Discussion and conclusions

5.4.1 Discussion

Reliability and generalizability studies consider performance inconsistency between consultations as a measurement error. However, physicians are expected to communicate equally well in all consultations. Adequate communication in some consultations but mediocre or inadequate communication in others is unacceptable. In this study, we thus explored the inconsistency of residents' communication performance in challenging consultations.

Our first study objective concerned the extent of communication performance inconsistency. We found an inconsistency coefficient of 0.482 for all consultation combinations. This coefficient is an accurate mea-

surement of inconsistency, as our study design and the use of multilevel analysis excluded other error variances. This inconsistency is comparable to the inconsistency of 0.45 reported by Baig et al. [5] and slightly larger than the inconsistency of 0.39 reported by Keen et al. [8]. We presume that we obtained a larger inconsistency coefficient than Keen et al., because we used different kinds of challenging consultations, while in the Keen et al. study the students performed the same type of bad news consultation twice. Our findings that inconsistency was smaller in consultations that are similar in goals, structure, and required skills (BBN-PMD and NEG-DTR), support this presumption and confirm our expectation concerning our second study objective. Differences in content, as suggested by Baig et al. and Keen et al. [5,8], seem to be less important, since we provided the residents with all necessary information about the cases and gave them ample opportunity to discuss the cases with colleagues before performing each consultation. Despite this procedure, inconsistency differed between the consultation combinations and appears to be case-specific.

Our third study objective concerned the relationship between performance inconsistency and average performance. We found no inverse correlations between inconsistency and average performance for all consultation combinations. However, we did find a inverse correlation for the consultation combinations that are dissimilar in goals, structure, and required skills (BBN-DTR and NEG-PMD). Since this correlation was not present in the similar consultation combinations, like Raymond et al. [19], we assume that statistical mechanisms were not completely responsible for this correlation and that this correlation represents a genuine relationship. We therefore conclude that more proficient residents demonstrate less inconsistency, but only if the consultations are dissimilar in goals, structure, and required skills. Furthermore, in the similar consultation combinations, the residents' variance component was larger and the inconsistency coefficient was smaller than in the dissimilar consultation combinations. These findings are in line with the hypothesis of Hodges that inconsistency would be relatively less prominent when the variance in performance between candidates is larger [21].

Our fourth study objective concerned the relationship between inconsistency and background in communication-skills training. Our study confirmed others that have found that communication-skills training improves communication performance [36-38]. Residents who had received more training in communication skills, including the skills of breaking

bad news, performed better in the BBN and PMD consultations than residents who had received less training. Apparently, the skills for breaking bad news were partly transferred to the post-mortem/donation request consultations, since the residents in this study had not received any prior training in requesting a post-mortem and tissue donation. However, the effect of CST background was not present in the NEG and DTR consultations. Thus, communication-skills training appears to have rather case-specific effects, and the goals and structure of, and required skills for the NEG and DTR consultations apparently vary too greatly from those of the BBN consultation in order to make the transfer of skills possible. The larger inconsistencies in the dissimilar consultation combinations support this presumption. At the same time, we did not find a relationship between CST background and inconsistency for the BBN-PMD consultation combination, which one would expect if the transfer of learned skills not only results in higher performance quality but also in less inconsistency. Nevertheless, we conclude that a set of generic or transferable communication skills that show a high level of stability and have applicability to a wide range of encounters, as suggested by several authors [14,25,26,29,30], does not exist. Rather, our results confirm the existence of both generic and case-specific skills [13,16,31]. Communication skills that are learned in medical education are generalizable to other consultations but only if these consultations are fairly similar in goals, structure, and required skills. In addition to these transferable skills, there are case-specific and context-specific communication skills that can only be practiced in specific consultations. This conclusion accords with the concern of Hodges that this would have troubling implications for both the teaching and evaluation of communication skills, because it would imply that each type of clinical problem that a student might encounter would have to be taught and evaluated separately [21]. At the same time, however, this conclusion is in line with our view that communication expertise requires more than learning a generic set of communication skills [46]. Learning new communication behavior implies the acquisition of new skills, but also the incorporation of mental representations of these skills in communication schemata as well as the formation of new links between these schemata and the mental representations of situations in which the use of the skills and schemata is appropriate. Therefore, communication behavior that is learnt in a specific context is not readily generalizable to other contexts, and communication education has limited effects if training is restricted

to a predetermined set of skills in standardized situations. Instead, communication education should provide the learning conditions described by Ericsson's model of deliberate practice [47], and offer ample opportunities to practice communication skills in a wide variety of realistic and challenging situations. Frequent and concise feedback should also be provided, and reflection on the process and outcome of the consultations should be stimulated, in order to ensure proficiency in skill performance, and also to form the required communication schemata and links between these schemata and specific consultations.

5.4.2 Limitations

The robustness of our results and conclusions is affected by some limitations to our study. We used a stratified random sample of 100 recordings divided over four types of challenging consultations, resulting in a group of 29 similar consultation combinations and a group of 21 dissimilar consultation combinations. Due to these small numbers, our conclusions must therefore be regarded with caution. Furthermore, each resident performed two different consultations. As a consequence, we could not determine inconsistency between more than two consultations or between two identical consultations. The generalizability of our results is also limited. Residents in their first year of postgraduate training performed the challenging consultations in an educational setting with simulated patients or relatives. Although the consultations took place in an authentic consulting room with trained actors playing the role of the patient or relative, residents' performance in regular consultations in clinical practice might be different and less inconsistent, as suggested by Reinders et al. [35].

5.4.3 Conclusions

Physicians should have a stable superior ability to communicate with patients and relatives. Thus, communication performance should be of high quality but also consistent, regardless of the type and complexity of the consultation. This study demonstrated a less than adequate performance and a fair amount of inconsistency in residents' communication in challenging consultations. The inconsistency was dependent on the type of consultations and somewhat related to average performance quality.

The effect of prior communication-skills training on performance quality was quite case-specific. Although we could not establish a clear relationship between CST background and inconsistency, we believe that inconsistency could be a valuable parameter of communication proficiency.

5.4.4 Practice implications

Medical communication education should not be restricted to the teaching of a predetermined set of skills in standardized situations. Instead, communication education should offer ample opportunities to practice and reflect both on generic and on consultation-specific skills in a wide variety of challenging consultations in order to improve performance quality and reduce performance inconsistency.

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Appendix 5.1: Three-level regression model of CELI score prediction.

Three-level regression model of CELI score prediction:

Level 1	Raters
Level 2	Consultations
	Consult-1 = first consultation = BBN or NEG
	Consult-2 = second consultation = PMD or DTR
Level 3	Residents

Model: random intercepts and slopes with "Consult-1" and "Consult-2" as predictors

$Score_{ijk}$	$= \beta_{1k}\,\text{Consult-1}_{jk} + \beta_{2k}\,\text{Consult-2}_{jk} + \upsilon_{0jk} + \varepsilon_{0ijk}$
β_{1k}	$= \gamma_{010} + \nu_{1k}$
β_{2k}	$= \gamma_{020} + \nu_{2k}$

Symbols and Notations:

$Score_{ijk}$	estimated CELI score of the k^{th} resident (1 .. 50) in the j^{th} consultation (1,2) assessed by the i^{th} rater (1..3)
β_{1k}	random intercept of the k^{th} resident's score of the first consultation

Symbols and Notations:

β_{2k}	random intercept of the k^{th} resident's score of the second consultation
γ_{010}	overall intercept of the scores of the first consultation mean of estimated scores of first consultation $= \mu_{consult-1}$
γ_{020}	overall intercept of the scores of the second consultation mean of estimated scores of second consultation $= \mu_{consult-2}$
ν_{1k}	random error component for the intercepts of the third (resident) level; the deviation of the k^{th} resident's intercept from the overall intercept of the first consultation
ν_{2k}	random error component for the intercepts of the third (resident) level; the deviation of the k^{th} resident's intercept from the overall intercept of the second consultation
$\nu_{\delta k}$	random error component for the slopes of the third (resident) level; the deviation of a resident's slope (between first and second consultations) from the overall slope
υ_{0jk}	random error component for the intercepts of the second (consultation) level
ε_{ijk}	random error component for the intercepts of the first (rater) level
$\sigma^2_{\nu 1}$	variance of error component ν_{1k}; variance of random intercepts of first consultation variance of estimated scores of first consultation $= \sigma^2_{consult-1}$
$\sigma^2_{\nu 2}$	variance of error component ν_{2k}; variance of random intercepts of second consultation variance of estimated scores of second consultation $= \sigma^2_{consult-2}$
$\sigma^2_{\nu\delta}$	variance of error component $\nu_{\delta k}$; variance of random slopes
$\sigma_{\nu 1 \nu 2}$	covariance of random intercepts of first and second consultations covariance of estimated scores between first and second consultation $= \sigma_{12}$
$\sigma^2_{\upsilon 0}$	variance of error component υ_{0jk}; variance of random intercepts of the second level
σ^2_{ε}	variance of error component of the first level ε_{ijk}

Formulas: Mean, variances, and coefficients derived from multilevel parameter estimates.

μ_0	(overall) mean of estimated average scores of first and second consultations $= (\gamma_{010} + \gamma_{020}) / 2$
σ^2_0	variance of overall mean scores $= (\sigma^2_{consult-1} + \sigma^2_{consult-2} + 2 \times \sigma_{12}) / 4$
μ_{dif}	overall mean of estimated score differences between first and second consultations $= \gamma_{010} - \gamma_{020}$
σ^2_{dif}	variance of random slopes between first and second consultations variance of score differences between first and second consultation $= \sigma^2_{\nu\delta}$

Formulas: Mean, variances, and coefficients derived from multilevel parameter estimates.

	$= \sigma^2_{consult-1} + \sigma^2_{consult-2} - 2 \times \sigma_{12}$
$\sigma^2_{residents}$	residents' estimated score variance not linked to consultations $= \sigma_{12}$
$\sigma^2_{resid \times onsult}$	residents' estimated score variance linked to consultations inconsistency variance $= \sigma^2_{dif} / 2$
$\sigma^2_{consultions}$	variance of mean differences between consultations $= \mu^2_{dif} / 4$
σ^2_{error}	error variance (variance of raters and all their interactions) $= \sigma^2_{\varepsilon}$
σ^2_{total}	total variance $= \sigma^2_{residents} + \sigma^2_{resid \times onsult} + \sigma^2_{consultations} + \sigma^2_{error}$ $= (\sigma^2_{consult-1} + \sigma^2_{consult-2}) / 2 + \sigma^2_{consultations} + \sigma^2_{error}$
$Scŏre_{incons,k}$	absolute value of estimated score differences between first and second consultations of k^{th} resident inconsistency score of k^{th} resident $= \lvert Scŏre_{1k} - Scŏre_{2k} \rvert$
$\mu_{inconsist}$	mean of inconsistency scores
$\sigma^2_{inconsist}$	variance of inconsistency scores
$R^2_{inconsist}$	inconsistency coefficient $= \sigma^2_{resid \times onsult} / (\sigma^2_{resid \times consult} + \sigma^2_{residents} + \sigma^2_{consult})$

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Chapter 6

Residents' and supervisors' patient-education competency in outpatient consultations

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Patient Educ Couns, under review

6.0 Abstract

Objectives
To establish whether supervisors can act as credible role models, coaches, and assessors of residents' patient-education competency.

Methods
Forty-four residents and fourteen supervisors participated in the study. All consultations at one, two, or three outpatient clinics of each participating physician were videoed. Each participant selected two consultations from each clinic for assessment, using the CELI instrument. We documented physician and patient characteristics, and calculated net consultation length for all consultations. After the consultation the patient filled in a questionnaire about the contact was their physician.

Results
957 consultations at 99 clinics were videoed. Participants selected 198 consultations for assessment. The average overall competency score was below adequate. Supervisors demonstrated better influencing skills but poorer listening skills than residents. Net consultation time was longer for supervisors. Patient opinion was almost equal for residents and supervisors.

Conclusions
Supervising consultants do not possess superior patient-education skills which enable them to act as credible role models, coaches, and assessors in workplace-based learning aimed at improving residents' patient-education competency in clinical practice.

Practice implications
To improve both residents' and supervisors' patient-education competency, we recommend deliberate practice by intervision, meaning mutual and egalitarian assessment of and feedback on residents' and supervisors' communication competency using videoed consultations.

6.1 Introduction

Good patient-physician communication is essential in order to achieve consultation goals. The patient is the main source of diagnostic information, the physician is legally obliged to inform his patients properly and to arrange for informed consent, and many treatment outcomes are dependent on patients' active involvement in their care. Communication expertise is therefore regarded as a core competency for practicing physicians [1]. However, medical specialists' communication with patients leaves a lot to be desired, as shown not only by patients' discontent about treatment, lack of information, not being heard, and not being involved in decision making, but also by the misunderstandings that arise between patients and physicians, and patients' non-adherence to medical advice [2-5]. Unfortunately, communication education as found in medical curricula and postgraduate training, and clinical experience have only limited effects on physicians' communication performance in clinical practice [6-17]. The lack of transfer into clinical practice of communication competency acquired in formal learning situations is a major cause of the limited effects of communication education [5,16,18,19]. This problematic transfer is often attributed to the inhibiting influence of clinical culture and supervisors' rejective behavior [20-29]. The transfer of learned communication behavior to clinical practice is also limited due to case-specificity. Case-specificity means that individual physicians' communication performance quality varies depending on the consultation's content, type, and context. Thus, a set of generic or transferable communication skills that show a high level of stability and have applicability to a wide range of encounters does not exist, and the effect of communication education will be limited if the training is restricted to a predetermined set of skills in standardized and simulated situations [30]. Various physician-related, patient-related, and consultation-related factors determining case-specificity have been identified [5]. In a previous study we found residents' performance inconsistency to be dependent on the similarity of consultations in terms of goals, structure, and required skills [30]. However, the influence of case-specific factors on physicians' communication behavior and on consultation outcomes has not yet been investigated thoroughly.

The introduction of competency-based learning in medical curricula [31] has encouraged attention to communication in clinical teaching, and contextual learning as provided by workplace-based learning is nowadays

considered essential for clinical communication-competency development [5,16,28]. The role of clinical supervisors is arguably crucial in workplace-based learning. Supervisors act as role models, coaches, facilitators, and assessors for trainees, whether students or residents. However, these educational roles require superior communication competency on the part of supervisors themselves. If not, they demonstrate wrong examples, are not credible as role models, and lack the insight into clinical communication needed for valid assessment and feedback [24,32-39]. In this study we compared supervisors' and residents' communication competency in general, and patient-education competency in particular, in order to establish whether supervisors could act as credible role models, coaches, and assessors of trainees' patient-education competency. By patient-education competency, we refer to the proficient use of communication skills, such as the provision of information, advice, and behavior modification techniques, in order to influence the patients' knowledge, opinions, and health and illness behavior so as to ensure that the patient is able to cooperate effectively in decisions about the care which he receives, and can make the best possible contribution to that care [40]. We also compared supervisors' and residents' consultation efficiency, and their patients' opinion about their contact with their physician in order to determine differences between supervisors and residents in consultation outcomes related to patient-education competency.

6.2 Methods

6.2.1 Participants and consultations

Forty-four residents and fourteen supervising consultants working in two departments of the University Medical Center in Groningen, the Netherlands, participated in the study. We collected the following data on participants: *position* (0 = resident, 1 = consultant), *gender* (0 = male, 1 = female), and *clinical experience* with values 0 to 6 for years in residency, and values 7 and 8 for supervisors with either less than 15 years or more than 15 years of clinical experience.

All consultations at one, two, or three outpatient clinics of each participant were videoed, conditional on patient consent, as part of a program for Communication Assessment and Feedback, using videoed

consultations (video-CAF) [41]. Physical examinations and medical procedures were audio recorded but not video recorded. For most of the participants, two clinics were videoed. Each participant selected two consultations from each clinic for assessment. Selection was based on the complexity of or communication obstacles encountered in the consultation's patient education.

6.2.2 *Consultations*

We labeled each consultation with the physician's identification code, the *consultation number* indicating the successive number of each consultation performed by a physician, and the *clinic number* (1, 2, or 3). For each recorded consultation we calculated: (1) total consultation length (*total time* in minutes), (2) the minutes a patient had to wait because the physician left the room for other activities such as supervision (*waiting time*), (3) the minutes a supervisor participated in a resident's consultation (*supervision time*), and (4) the duration of interventions, such as taking a biopsy, removing stitches, or changing dressings (*intervention time*). From these times we calculated the net consultation length (*net time* in minutes = 'total time' minus 'waiting time' minus half of the 'supervision time' minus 'intervention time'). We subtracted only half of the supervision time from the total time, since there was usually substantial information exchange with the patient when a supervisor was present. We also used the dummy variables *waiting* (values 0 and 1), indicating whether the patient had to wait during the consultation, and *supervision* (values 0 and 1), indicating whether a supervisor actually participated in the consultation for some time.

6.2.3 *CELI assessment*

A trained rater assessed all selected consultations, using the CELI instrument. A second trained rater also independently assessed approximately half of the consultations for reliability analysis. The CELI instrument assesses a physician's patient-education competency by assigning scores to the performance of separate communication skills [42]. A communication skill is defined as a discrete and observable instance of verbal and/or non-verbal behavior (= utterance) by which the physician contributes to the efficient attainment of the conversational objectives [43]. The skills are

grouped into four functional categories or subcompetencies required for effective patient education: (1) control of the conversation and fostering the relationship, (2) explaining, (3) listening, and (4) influencing. The four subcompetencies and their matching skills have been described in previous studies [42,44]. The performance of a skill is assessed on a four-point scale: -2 = poor, -1 = inadequate, +1 = adequate, +2 = good. When the physician does not perform a skill where the performance is advisable, the skill is scored -1 (= advisable) or -2 (= strongly advisable). The skills are evaluated for their intrinsic quality, that is, how well the skill was performed, and for their contextual quality, that is, at what moment in the consultation the skill was performed [45]. Every utterance of the physician receives one score for the performance of the skill that the utterance represents. The score consists of the letter of the subcompetency to which the skill belongs and a performance score. For example, when the physician adequately reflects the feelings of the patient, this utterance is scored L+1, meaning the adequate performance of a listening skill. The time at which a specific skill was observed and a short comment about the performance of that skill is also noted on the CELI scoring form. Depending on the goals and the consultation process, some skills are evaluated frequently, some skills only infrequently, and some skills are not relevant. The rules for these ratings are set out in an illustrated manual.

Based on the number of positive skill scores and negative skill scores four subcompetency scores (variables *Control*, *Explaining*, *Listening,* and *Influencing*) and an overall competency score (variable *CELI Score*) are calculated which range from 0 (disastrous performance) to 10 (outstanding performance). A score of 5 represents an equal number of positive and negative skill scores and is interpreted as a mediocre communication skills performance. A score of 6.7 represents twice the number of positive than negative skill scores and is interpreted as an adequate performance. The CELI instrument has good interrater reliability, convergent validity, and construct validity [17,30,41,42].

6.2.4 Patient characteristics and opinion

We documented *new patient* (values 0 and 1), indicating whether the patient was familiar to the department or referred by the GP or another medical specialty, and *patient familiarity* (values 0 and 1), indicating whether the patient was unfamiliar to or previously seen by the physician

concerned. *Patient gender* and *patient age* were also documented. After the consultation the patient completed a 10-item questionnaire that evaluated the contact with the physician. The questionnaire was developed and used in a previous study [41]. The average score of the items reflected the patient's *general opinion* about the contact.

6.2.5 Analyses

The subcompetency scores (Control, Explaining, Listening, and Influencing) and the CELI scores were normally distributed, which allowed for parametric testing. We calculated the Intraclass Correlation Coefficient for absolute agreement ($ICC2_{A,1}$) between the two trained raters' assessments [46].

We built and tested multilevel-regression models to explain the variance in the overall competency scores and in the separate subcompetency scores. A multilevel analysis considers the multilevel-data structure and provides parameter estimates for the regression models' intercepts and random slopes [47]. Since we targeted the simplest models with the best fit, we first checked for the number of levels required. Two levels were sufficient for the regression models of the overall competency and subcompetency scores (physician and consultation levels). The first-level (consultation) variance is comparable to the physician-by-consultation-interaction variance in a generalizability study and represents physicians' performance inconsistency due to case-specificity. The second-level (physician) variance represents the differences between physicians in average consultation scores. We built null-models and models with explanatory variables. We added the consultation number to the null-models as an explanatory variable in order to attain more realistic variance estimates, since intercept-only multilevel models with repeated measurements overestimate the variance at consultation level and underestimate the variance at physician level [47]. The significance of the explanatory variables in the final models was determined by comparing the final model deviances (-2*loglikelihood) with the deviances of the models without the explanatory variables.

The scores of the net consultation time had a skewed distribution. Thus, we took the square root of the net-time scores to obtain normally distributed scores [48]. We built and tested two-level regression models (physician and clinic levels) to explain the net-time variance. We also

calculated product-moment correlation coefficients between the square root of the net consultation time and the overall competency and subcompetency scores in the selected consultations.

We established the underlying structure of the patient questionnaire by maximum-likelihood factor analysis of the item scores with varimax factor rotation. We used the general opinion scores and the separate factor scores in two-level regression analyses to explain variances in patients' responses. Since the patients' responses to the questionnaire were processed anonymously, we could not link their responses to the separate consultations. Thus, we used the average of patients' responses, collected from each outpatient clinic, in our analyses. The general opinion scores and the factor scores, averaged per clinic, were normally distributed. We calculated product-moment correlation coefficients between the general opinion scores and the separate factor scores, averaged per clinic, on the one hand, and the overall competency and subcompetency scores on the other.

We used IBM SPSS Statistics 20 [49] for the unilevel analyses and MLwiN 2.26 [50] for the multilevel analyses.

6.3 Results

In this study we used 957 videoed consultations from 99 clinics performed by 44 residents and 14 supervisors. Participating physicians selected 198 consultations for assessment. One rater assessed all selected consultations. A second rater assessed 110 consultations. Patients' refusal to participate was about 10%.

6.3.1 Communication competency

Table 6.1 presents an overview of mean CELI competency and subcompetency scores with standard errors of measurement (SEM). Table 6.1 also contains the percentages of scores above 6.7, which means adequate performance, and the interrater reliability coefficients ($ICC2_{A,1}$) of the overall competency and subcompetency scores. The average overall competency score was 6.13, which is less than adequate. Physicians' patient-education performance was adequate in only 30.8% of the consultations. On average, the Listening subcompetency scored lowest of all the subcompeten-

cies. The overall competency score reliability was excellent (0.940), while the subcompetency score reliabilities were adequate, varying between 0.694 and 0.797 [46].

Table 6.1: Means and reliabilities of overall competency and subcompetency scores.

CELI scores (N = 198) Subcompetencies	Mean	SEM	Percentage higher than 6.7	Reliability of 2 raters (N = 110)
Control	6.09	0.118	35.7%	0.797
Explaining	6.18	0.110	36.8%	0.736
Listening	5.11	0.113	16.0%	0.776
Influencing	6.56	0.097	46.0%	0.694
Overall competency	6.13	0.080	30.8%	0.940

The two-level analyses of the overall competency scores, presented in the first column of Table 6.2, yielded no significant relationships between the overall competency score and explanatory variables. The multilevel variances of 0.434 for resident level and 0.857 for consultation level indicate that 34% of the variance in the model is connected to performance differences between physicians, while 66% of the variance is related to performance differences between each physician's consultations. The latter variance represents the physicians' performance inconsistency due to case-specificity [30].

Physician's position and the interaction effect of Position and Clinic number explained 31% percent of the Listening subcompetency variance at physician level and another 4% of the consultation-level variance (fourth column of Table 6.2). Figure 6.1 illustrates these relationships. Residents' mean Listening subcompetency was 5.25 for both clinics. Supervisors mean Listening subcompetency improved from 4.04 to 5.22. Physician's position explained almost all Influencing subcompetency variance at the physician level (89%) with supervisors performing on average 0.82 score points better than residents (fifth column of Table 6.2).

Table 6.2: Two-level regression models of overall competency and subcompetency scores.

	Final models with explanatory variables [a]				
Fixed effects	CELI Score Coeff. (SEM)	Control Coeff. (SEM)	Explaining Coeff. (SEM)	Listening Coeff. (SEM)	Influencing Coeff. (SEM)
Intercept (γ_{000})	6.08 (0.134)	6.04 (0.195)	6.17 (0.181)	5.25 (0.195)	6.41 (0.154)
Position (0 =resid. 1 = consult.)	-	-	-	-1.21 (0.340)	0.82 (0.212)
Clinic number (1 or 2)	-	-	-	-	-
Position x Clinic Number	-	-	-	1.18 (0.455)	-
Random effects					
Physicians ($\sigma_{v0}{}^2{}_j$)	0.434 (0.132)	0.823 (0.269)	0.551 (0.216)	0.326 (0.199)	0.025 (0.109)
Consultation ($\sigma_{\varepsilon}{}^2{}_{ij}$)	0.857 (0.102)	1.914 (0.228)	1.875 (0.223)	1.936 (0.255)	1.700 (0.201)
Proportion of variance modelled:					
R^2 physician level	-	-	-	0.31	0.89
R^2 consultation level	-	-	-	0.04	0.00
Goodness of model fit					
-2*loglikelihood	588.603	741.973	726.047	730.506	669.804
X^2 (df)				12.331 (3)	12.306 (1)
(IGLS Deviance)				$p < 0.001$	$p < 0.0001$

[a] Only significant effects are presented

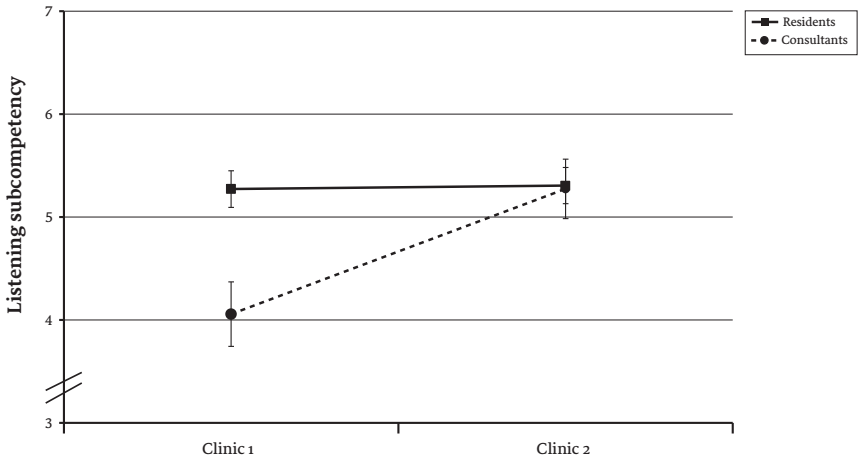

Figure 6.1: Mean Listening subcompetency scores for residents and consultants in two clinics.

6.3.2 Efficiency

The two-level regression model of the square-root net consultation time, presented in the first column of Table 6.3, shows that physician's position, clinical experience, and familiarity of the patient with the department and with the physician concerned explained (0.30 + 0.21 =) 51% of the variance. The second column of Table 6.3 contains the two-level regression model of the net consultation time for interpretation purposes. However, the parameters of this model are not usable for significance testing, since the net consultation times were not normally distributed.

The average net consultation time was 12.9 minutes. On average, supervisors' net consultation time was 5 minutes longer than residents' net time. Each year in residency diminished the net time by 0.55 minutes (33 sec.). Consultations with newly referred patients lasted, on average, 5.35 minutes longer, and consultations with patients who were familiar to the physician, lasted, on average, 1.38 minutes shorter. Figure 6.2 illustrates the relationships for the observed net consultation times and for the predicted times.

Table 6.3: Two-level regression models of consultation time and patient opinion.

	Final models with explanatory variables [a]			
	Square net time	Net consult. time	General opinion	Opinion about competence
Fixed effects	Coeff. (SEM) (N = 957)	Coeff. (SEM) (N = 957)	Coeff. (SEM) (N = 868)	Coeff. (SEM) (N = 823)
Intercept (γ_{000})	3.44 (0.080)	12.50 (0.592)	8.39 (0.057)	-0.17 (0.052)
Position (0 =resid. 1 = consult.)	0.72 (0.168)	5.02 1.242)	-	0.34 (0.069)
Years in residency/Clinical experience	-0.076 (0.027)	-0.50 (0.198)	-	-
New referral (0,1)	0.72 (0.065)	5.32 (0.485)	-	-
Familiar patient (0,1)	-0.20 (0.065)	-1.39 (0.486)	0.16 (0.064)	0.22 (0.062)
Supervision (0, 1)	-	-	-0.18 0.089)	-0.19 (0.084)
Patient age	-	-	0.06 (0.015)	0.03 (0.014)
Random effects				
Physicians ($\sigma_{v0}{}^2{}_j$)	0.067 (0.019)	3.57 (1.03)	0.044 (0.018)	0.004 (0.009)
Consultation ($\sigma_{\varepsilon}{}^2{}_{ij}$)	0.541 (0.026)	30.20 (1.43)	0.719 (0.036)	0.648 (0.033)
Proportion of variance modelled:				
R^2 physician level	0.27	0.33	0.21	0.32
R^2 consultation level	0.21	0.20	0.03	0.03
Goodness of model fit				
-2*loglikelihood	2191.148	6039.230	2214.445	1983.456
X^2 (df)	233.201 (4)		282.686 (3)	285.363 (4)
(IGLS Deviance)	$p < 0.001$		$p < 0.001$	$p < 0.001$

[a] Only significant effects are presented

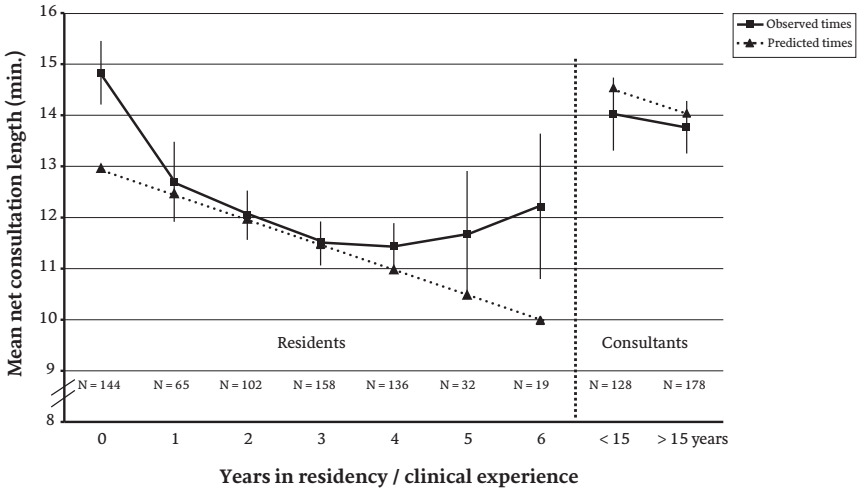

Figure 6.2: Mean net consultation length for residents and consultants.

We found no other relationships between consultation length, on the one hand, and physician characteristics or patient characteristics such as gender, on the other. We found significant product-moment correlations between the square-root net consultation time on the one hand, and the Control subcompetency, the Listening subcompetency, and the overall competency scores on the other, in the selected consultations (first column of Table 6.4).

Table 6.4: Product-moment correlations between net consultation time, patient's opinion, and overall competency and subcompetencies.

CELI scores	Net consult. time (square root)		General opinion [a]		Opinion about competence [a]	
Subcompetencies	(N = 198)	p <	(N = 99)	p <	(N = 99)	p <
Control	-0.14	0.05	0.17		-0.06	
Explaining	-0.13		0.34	0.001	0.20	0.05
Listening	-0.17	0.02	0.31	0.002	0.01	
Influencing	-0.04		-0.16		-0.01	
Overall competency	-0.22	0.005	0.26	0.010	0.03	

[a] Scores were averaged per clinic

6.3.3 Patient opinion

We collected 868 patient questionnaires, which indicates a response rate of 91%. The maximum-likelihood factor analysis of item scores with vari-

max factor rotation yielded four factors explaining 81% of the score variance. The first factor mainly involved patients' opinion about the information received (52%), the second factor involved patients' opinion about the physician's general competency, such as medical proficiency and inspiring confidence (19%), the third factor involved patients' opinion about their wishes and concerns being taken seriously (7%), and the fourth factor involved patients' opinion about the physician's general level of concern (3%).

Patient familiarity and patient age had positive effects, and the presence of a supervisor during the consultation (supervision) had a negative effect on a patient's general opinion (third column of Table 6.3). These variables explained 24% (0.21 + 0.03) of the variance. The same variables complemented by the physician's position explained 35% (0.32 + 0.03) of the 'opinion about general competency' factor variance (fourth column of Table 6.3). None of the explaining variables related to the other patient-opinion factors. General opinion correlated with the Explaining and Listening subcompetencies, and with overall competency, when analyzed at the clinic level (third column of Table 6.4). The 'opinion about general competency' factor correlated with the Explaining competency (fifth column of Table 6.4).

6.4 Discussion and conclusions

6.4.1 Discussion

Workplace-based learning is nowadays considered essential for clinical communication-competency development [5,16,28]. The role of clinical supervisors is arguably crucial in workplace-based learning. Supervisors act as role models, coaches, facilitators, and assessors for trainees, whether students or residents. However, these educational roles require superior communication competency on the part of the supervisors themselves.

In this study we compared supervisors' and residents' communication competency in general and their patient-education competency in particular in order to establish whether supervisors could act as credible role models, coaches, and assessors. We also compared supervisors' and residents' consultation efficiency, along with their patient opinions about the contact with their physician in order to determine differences between

supervisors and residents in consultation outcomes related to patient-education competency.

Residents and supervisors demonstrated equal, although below adequate, average patient-education competency. Performance was adequate in 30.8% of the consultations. However, the percentage of physicians demonstrating adequate performance in *all* their consultations was considerably smaller due to performance inconsistency. The consultation level variance was 0.857, which means a performance-inconsistency standard deviation of 0.925. Given an error margin of 5%, an average performance score above (6.7 + 0.925 x 1.64 =) 8.22 would mean an adequate performance in all consultations. Only 3% of the physicians attained this average performance score. On average, the Listening subcompetency scored lowest of all subcompetencies. Residents demonstrated better listening skills, while supervisors appeared to possess better influencing skills. However, supervisors' listening skills improved and they attained the Listening competency level of residents, due to the supervisor training they received as part of the video-CAF program [41]. This finding accords with others that found that educational interventions are able to improve clinical-communication behavior if they specifically address communication behavior in clinical practice [6,51,52].

Contrary to the expectations suggested by Reinders et al. [53] - that performance inconsistency would probably be smaller in outpatient consultations than in simulated consultations - the performance inconsistency we found in this study (66.4%) is comparable to the relative large inconsistency of 67.5% that we found in challenging simulated consultations that are dissimilar in goals, structure, and required skills [30]. Thus, the case-specific effects on patient-education competency in outpatient consultations are comparable to those effects found in dissimilar simulated consultations. Apparently, performance consistency is more difficult to attain in real outpatient consultations than it is in standardized simulated consultations. However, we consider the selected consultations of this study to have been challenging too, since the outpatient consultations were selected for their patient-education obstacles. This might have resulted in greater performance inconsistency due to selection bias, as compared with inconsistency in routinely performed outpatient consultations.

We conclude that almost all residents and supervisors lack a stable superior patient-education competency when confronted with challenging

outpatient consultations, which is the hallmark of patient-education expertise. This conclusion is in line with our expectations based on the reflective-impulsive and deliberate-practice models [54], which predict that residents and supervisors do not attain patient-education expertise, since the learning conditions for achieving expertise are not met in medical training and in clinical practice. The reflective-impulsive and deliberate-practice models also predict that clinical experience alone results in a 'satisfactory' performance level. Upon reaching this satisfactory level, performance becomes stable and increasingly automated. This automation could mean that time efficiency and performance consistency improve, since communication behavior would be more and more steered by the fast and stable impulsive system. Our findings provided only limited support for such a hypothesis. The net consultation times became shorter, but only during residency. Consultation duration was longer for supervisors than for residents, when corrected for patient familiarity with department and physician. Furthermore, we found no relationship between clinical experience and performance inconsistency.

We were surprised by our finding that supervisors' consultations lasted longer if the net consultation time was corrected for patient familiarity with department and physician. Probably, supervisors are continuously urging their residents to carry out their consultations efficiently, but they themselves are not called on to account for their own consultation efficiency. Net consultation time was related to the overall competency in the consultations selected and especially to the Control and Listening subcompetencies. This finding corresponds with that of others who conclude that important patient-education strategies, such as structuring decision-making, encouraging patient input, and addressing concerns, not only result in improved patient outcomes but also in more consultation efficiency [55,56].

Patients' general opinion about the contact with their physician was related to the Explaining and Listening subcompetencies. Patients' general opinion was equal for residents and supervisors, but patients expressed more trust in the supervisors' general competency. Familiar patients and older patients valued the contact with their physician slightly higher. However, patients were less positive about the contact when a supervisor participated in a resident's consultation, which is something quite usual in junior residents' consultations. Contrary to

other studies [57], we found no relationships between consultation length and physician and patient gender.

6.4.2 Limitations

The validity of our study could have been jeopardized. We did a cross-sectional study in which residents and supervising consultants with different educational backgrounds, clinical experience, and other characteristics were compared. A longitudinal study in which physicians' patient-education competency is frequently assessed, starting from their first year in residency until they have worked as consultants for several years, should corroborate the findings of this study. The generalizability of our conclusions is also limited, since only 44 residents and 14 consultants from two departments of one university hospital participated in the study.

6.4.3 Conclusions

From our findings we conclude that supervising consultants do not possess the superior patient-education competency required to act as credible role models, coaches, and assessors in workplace-based learning aimed at improving residents' patient-education competency. Consultants should first improve their own patient-education competency by deliberate practice before they can act as supervisors in this respect. Deliberate practice means that individuals purposefully counteract tendencies toward automatism by actively setting new goals and higher performance standards, that is forcing themselves to reflect on the situation at hand, to consider goals and strategies, and to decide which skills are appropriate for attaining those goals [58]. Indispensible learning conditions for successful deliberate practice are: (1) stimulating learning tasks with well-defined goals, of short duration, and with opportunities for immediate feedback, reflection, and corrections; (2) ample opportunities for repetition, gradual refinements, and practice in challenging situations; and (3) being motivated to improve. Additional training, guided by communication facilitators, could be of value in improving consultants' communication competency and their didactic skills required for valid assessment and effective feedback. However, training is often difficult to organize due to consultants' workload and logistical obstacles. Furthermore, the effects of training are usually limited. We therefore recommend deliberate

practice by intervision, meaning mutual and egalitarian assessment of and feedback on residents' and supervisors' communication competency using videoed consultations (video-CAF intervision). However, video-CAF intervision would require the implementation of deliberate-practice learning conditions for communication improvement in clinical culture.

6.4.4 Practice implications

Since the quality and efficiency of residents' and supervising consultants' patient-education performance is comparable, improvement in both residents' and supervising consultants' clinical communication competency should be aimed for. Intervision, meaning mutual and egalitarian assessment of and feedback on communication competency in clinical practice, instead of one-sided supervision of residents, could be an interesting procedure to use to attain this goal.

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Chapter 7

How to attain expertise in patient education

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7.0 Abstract

Several factors complicate the attainment of expertise in clinical communication. Medical curricula and postgraduate training insufficiently provide the required learning conditions of deliberate practice to overcome these obstacles. In this paper we provide recommendations for learning objectives and teaching methods for the attainment of professional expertise in patient education.

First, we propose to use functional learning objectives derived from the goals and strategies of clinical communication. Second, we recommend to use teaching and assessment methods which: (1) contain stimulating learning tasks with opportunities for immediate feedback, reflection, and corrections, and (2) provide ample opportunity for repetition, gradual refinements, and practice in challenging situations. Video-on-the-job fits these requirements and can be used to improve the competency in patient education of residents and medical staff in clinical practice. However, video-on-the-job can only be successful if the working environment supports the teaching and learning of communication and if medical staff that supervises the residents is motivated to improve their own communication and didactic skills.

Case: John & Sally

John, a senior pediatrician, is supervising Sally, a pediatric resident in her last year of training. Sally has just seen Peter, a six year old boy with difficult asthma who is overweight, and his mother. Sally has seen them frequently over the last year. In each consultation, she recommended daily inhaled corticosteroid maintenance medication, elimination of tobacco smoke exposure at home, a healthy daily diet with limited snacking, an increase in physical exercise, and a reduction of sedentary activities, such as computer gaming. She also stressed the importance of strict adherence to this regime. However, over and over again, she discovered that the recommendations had not been followed and that Peter's condition had not improved. So the following conversation with Peter's mother took place:

Sally: *So you told me that Peter is not getting his medication daily. But, you know that Peter should take his medication regularly. Therefore, you should be more strict in giving him his medication.*

Mother: *Yes I know, but sometimes when we go out, I just forget to take his inhaler with me and sometimes he is playing somewhere else with his friends, so I cannot give him his inhaler.*

Sally: *I also told you that smoking inside the house is very bad for Peter. Therefore, it is very important that you prevent smoking by anyone inside your house.*

Mother: *We have really tried to quit, but when my family or friends are visiting us, it just doesn't work. I don't want to argue with everyone about their smoking and spoil the atmosphere.*

Sally: *What about getting some physical activity with Peter?*

Mother: *We have really tried and when the weather is fine, we sometimes go out to the playground. But to go there when it's raining, is just not possible. I think that Peter will even get sicker then.*

.....

And on and on it went. Smoking, exercising, eating, taking medicine, there were always external causes which kept the mother from following the instructions. Sally even knew the answers before posing the questions. As a result, she had great difficulty in not becoming angry and losing control over the conversation. So she decided to bring this consultation up during her supervision with John, which led to the following exchange:

John: *So you couldn't persuade Peter's mother to follow your instructions. I think you should have explained more clearly to her the detrimental long-term effects of her non-adherence on Peter's health.*

Sally: *I did explain the detrimental effects, not only in this, but in each and every consultation. However, she does not want to take responsibility for her son's health and finds excuses for her non-adherence over and over again.*

John: *Yes, you are right, some parents are very stubborn. But Peter is your patient and he is suffering from his mother's stubbornness. As his pediatrician you have to be more tenacious. Do not accept the objections of the mother. Make clear demands and let the mother promise you that she will meet these demands.*

Sally: *But, John, I stated my demands and I even wrote them down for her. But she said that she lost the paper and forgot about them. She is really hopeless!*

John: *Did you consider to call in social work in order to prevent further damage to Peter's health?*

Sally: *Sure I did. But when I mentioned this option, the mother got furious and refused to discuss the topic at all.*

.....

And so on and so on!

7.1 Introduction

The CanMEDS physician competency framework which is the current standard in medical training, requires expertise in communication for practicing physicians [1]. The framework describes the communication competencies which a physician should master. Patient education is one of the core competencies. This is defined as the use of educational methods, such as the provision of information, advice and behavior modification techniques, to influence the patient's knowledge, opinions and health and illness behavior in order to ensure that the patient is able to cooperate effectively in deciding on the care which he receives and can make the best possible contribution to that care[1] [2].

Almost all medical schools offer communication-skills training in order to prepare their students for the communication requirements of clinical practice [3,4]. The programs differ in size, learning objectives, teaching methods, and assessment procedures. Undergraduate programs used to focus on communication skills of history taking [5]. Nowadays, students are also being taught the patient-education skills [6]. Communication-skills training for residents is less commonly offered [4,7,8].

Table 7.1: Examples of challenging patient-education consultations.

Conversations with several interlocutors such as a child and his/her parents.
Negotiating with well-informed (internet) and demanding patients.
Obtaining informed consent for radical medical procedures.
Dealing with non-adherence.
Confrontation with dominance or disagreement of parents.
Breaking bad news.
Addressing anger, confusion or misunderstanding.
Disclosure of medical errors.
Discussing 'intimate' subjects such as sexuality, addiction or child abuse.
Discussing end-of-life issues such as non-resuscitation, post-mortem and donation.
Language barriers, dealing with cultural diversity.

Although students improve their communication performance in medical school [9-12] and are able to take a proper history when they graduate, they generally do not acquire a stable superior ability to handle challenging patient-education conversations effectively [13-15], which is a hallmark of clinical communication expertise. Postgraduate communication educa-

1 In this paper we use the word patient also for the relatives of the patient such as the parents of a child.

tion has little effect on the communication competency of residents and senior physicians either [16-20]. Table 7.1 presents some examples of challenging patient-education conversations.

In this paper we analyze why expertise in patient education is difficult to attain. We also give recommendations to improve the teaching and learning of patient-education skills. Our analysis and recommendations are based on the model of acquisition of expert performance through deliberate practice [21] and substantiated by the recommendations of others. Pediatricians may use these recommendations to improve their own patient-education competency, as well as to assess residents' patient-education competency and to give them feedback on their performance.

7.2 Acquisition of expert performance through deliberate practice

Ericsson's model of acquisition of expert performance provides an explanation of the limited results of communication education. The model states that after limited training and experience, an individual's performance is adapted to the typical situational demands. Upon reaching this satisfactory level, performance becomes stable and increasingly automated. Additional experience will not improve behavior and expertise is never attained, since this requires deliberate practice under specific learning conditions.

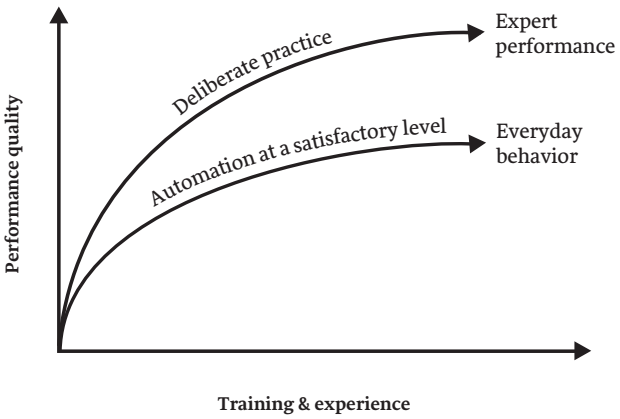

Figure 7.1: Acquisition of expert performance by deliberate practise. Adapted from Ericsson [21].

Figure 7.1 illustrates the course of improvement of everyday communication behavior to a satisfactory level by automation and of communication performance to expertise through deliberate practice. Deliberate practice means that individuals purposefully counteract tendencies toward automatism by actively setting new goals and higher performance standards, i.e. forcing themselves to reflect on the situation at hand, to consider goals and strategies, and to decide which skills are appropriate to attain those goals. If the new communication behavior meets the demands of the situation, the behavior becomes automated by further practice. If not, further reflection and adjustment are necessary.

Table 7.2 presents the learning conditions of deliberate practice based on a review of research into skills acquisition [21].

Table 7.2: Learning conditions of deliberate practice.

1)	Learning tasks with well-defined goals.
2)	Stimulating learning tasks of short duration with opportunities for immediate feedback, reflection, and corrections.
3)	Having ample opportunities for repetition, gradual refinements, and practice in challenging situations.
4)	Being motivated to improve.

In the next section we will address the learning condition of well-defined goals and describe clear learning objectives which are based on a functional model of patient education [22]. The other learning conditions are dealt with in Section 7.4 by elaborating on video-on-the-job which is a method for communication teaching and assessment in clinical practice.

7.3 Which patient-education skills should pediatricians master?

Patient education serves to address particular goals of both pediatrician and patient. The pediatrician, being the professional provider of care, is primarily responsible for the attainment of these goals [23,24]. This principle implies that a pediatrician must not only provide information, but must also help the patient to understand, digest, and use the information to decide about and adapt his behavior. The CELI model, presented in Figure 7.2, distinguishes four tasks that a pediatrician has to perform in a consultation (outer circle) in order to facilitate this information processing by the patient (inner circle). These tasks or subcompetencies are:

Control, Explaining, Listening, and Influencing. Appendix 7.1 contains an overview of these tasks and their matching skills.

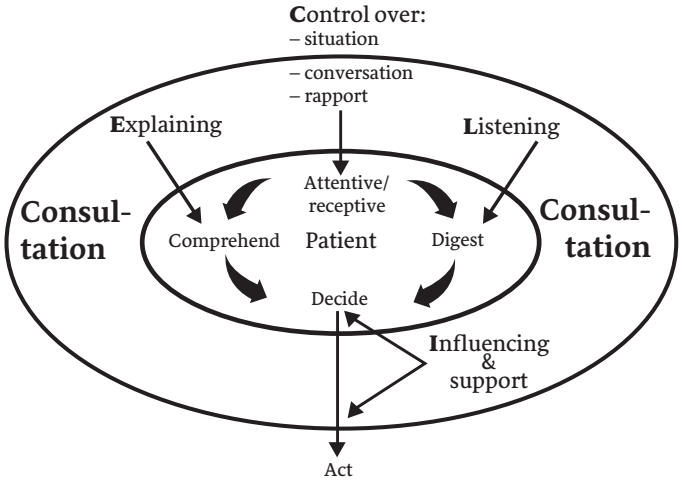

Figure 7.2: The CELI model of patient education.

The Control task relates to three aspects of the consultation: (1) control over the situation in order to have an undisturbed and private conversation. This task must be performed before the consultation starts and is therefore positioned outside the outer circle in Figure 7.2; (2) governing the conversation in order to reach the pre-set goals [23]. The pediatrician must fulfill his role as chairman of the meeting with his patient and has to monitor the agenda and structure the conversational flow and topics [23,25]. This enables the patient to be attentive and receptive to the provided information and helps the pediatrician to work towards the pre-set goals efficiently. However, control does not mean that the patient is a passive contributor to the consultation. On the contrary, cooperation between the pediatrician and the patient is an essential prerequisite to attaining the goals. As a result, (3) fostering the relationship is an important part of the control task. Pediatricians should therefore master the strategies and skills required for control of the consultation process and for building and maintaining rapport [25-29].

Effective Explaining results in patients' comprehension and recall of the provided information (cognitive digestion). In order to reach these goals the pediatrician should take the patient's pre-existing knowledge and additional information needs into account. Information should be

presented in a structured and intelligible manner and patients' understanding checked regularly [22,25,30].

By Listening to the feelings and opinions of the patient, the pediatrician encourages the patient to digest the information emotionally. At the same time, the pediatrician gains an insight into the patient's comprehension, thoughts, feelings, and consent. Furthermore, listening to the patient has a beneficial effect on the relationship, since it provides the patient with the feeling of being heard, understood, and supported. Active or attentive listening is regarded as an essential competency for physicians [25,31-34].

Influencing means that the pediatrician helps the patient to reach a decision, such as consenting to a medical procedure or change his behavior, and to act accordingly [22]. The pediatrician can vary his directness of influence. The shared decision-making model currently promoted as the preferred, patient-centered approach for decisions, is located approximately midway in the directness dimension [35,36]. However, a direct instruction or recommendation is sometimes required [37], while at other times a counseling, motivational or empowering approach is advisable [38]. Occasionally, conflict-management skills can be required to influence a patient's decision and behavior [39]. Influencing also includes the support which a pediatrician can offer by entering into clear agreements, establishing a contingency plan, providing decision aids [40], or arranging further professional help. Since the patient's behavior change takes place after the consultation the pediatrician should also arrange for an evaluation of the performance and outcomes. Thus, a physician should master a wide range of influencing techniques for effective: (1) advice and instruction, (2) counseling and motivational interviewing, (3) conflict management and (4) guidance and coaching [35,38,40-52].

7.4 How should pediatricians improve their patient-education competency?

Several factors complicate the learning of professional communication behavior. Table 7.3 gives an overview of these complicating factors.

Table 7.3: Factors complicating the learning of professional communication.

1	Unlearning familiar, deeply rooted, but ineffective behavior.
2	Content and context specificity of communication skills.
3	Communication is strongly connected to personality and maturation in private and professional life.
4	Communication is dependent of content knowledge and clinical experience.
5	Reflection on communication is difficult without hampering the conversational flow.
6	Unclear outcomes which do not motivate to improve.

1 When entering medical school, students have lifelong experience with communication and they use familiar communication patterns in daily life. However, in medical training they have to learn to communicate professionally, which means that they not only have to learn new behavior, but also to unlearn familiar, ineffective patterns which are often deeply rooted in their communication repertoire.
2 Communication competency has substantial content and context specificity [10,53-57]. This means that communication skills learned in a specific context such as an educational setting, do not generalize easily to other contexts such as clinical practice [20,24,58-62].
3 Professional communication is determined by professional goals, but also by personal goals, needs, emotions, attitudes, and social standards. Communication is also closely bound to self-image and personality and is influenced by emotional and social maturity in private and professional life [63]. Changing communication patterns often requires considerable changes in personal views and beliefs for which professional experience and maturation are indispensable.
4 Communication is dependent on content. Students and to a lesser extent residents often lack the medical and procedural knowledge, diagnostic and therapeutic skills, and clinical experience required for effective communication with patients [56]. A physician can therefore only attain expertise in communication when his clinical knowledge and experience are sufficiently developed;
5 Communication is a fast and on-going process which leaves hardly any space for interim reflection without hampering the continuity of the conversation.
6 Reflection on the effectiveness and efficiency of a conversation is often difficult, since the effects of skill performance are subjectively shaped and the outcomes are often ambiguous, obscure, and determined by

other factors than communication [64]. This lack of clear outcomes discourages physicians to improve their communication competency.

Learning through deliberate practice could overcome these complexities. In the next section, we will discuss a method of workplace-based learning which is particularly suited for teaching and learning communications skills in clinical practice and takes into account the principles of deliberate practice and the recommendations of others [3,4,6,13,18,64-73].

7.5 Workplace-based learning by video-on-the-job

The introduction of the CanMEDS framework in medical curricula has not only encouraged the attention to communication in clinical teaching, but has also brought workplace-based learning and assessment into focus. Today, clinical supervisors use workplace-assessment tools such as the mini-clinical examination (mini-CEX) to provide formative assessment and feedback to interns and residents [74]. The feasibility, reliability, and validity of these assessments are promising although the educational effects are less convincing [75].

Video-on-the-job means reviewing videoed consultations with peers and/or supervisors. It is a valuable teaching tool [76-79] and has some advantages over real-time mini-CEX for assessing communication competency: (1) it is less intrusive than mini-CEX, (2) the most appropriate consultations can be selected for assessment, (3) each selected consultation can be assessed by several assessors including the assessed resident or pediatrician, (4) assessment can be performed when most appropriate, and (5) a more detailed and complete assessment of a consultation is possible. We therefore recommend using video-on-the-job as much as possible in pediatric residency training but also as an intervision tool for practicing pediatricians.

To be effective in rehearsing and refining communication skills in clinical practice through video-on-the-job, residents and pediatricians should prepare the consultations properly and the patient's opinion about the process and outcome of the consultation should be elicited afterwards. In the feedback and discussion session both the medical content and the communication process and outcomes can be reviewed. In the communication discussion, the following subjects should always be

addressed: (1) the physician's and patient's goals during the consultation, (2) the strategies and communication skills the physician used to attain these goals, (3) the quality of communication-skills performance (how and when performed), and (4) the process and outcomes of the consultation as viewed by the physician, patient, peers and/or supervisor. Table 7.4 presents the requirements for a video-on-the-job program.

Table 7.4: Requirements for video-on-the-job.

· Regular and natural part of residency training.
· Systematic planning of recordings and feedback sessions.
· Availability and easy accessibility of recordings to pediatricians concerned.
· Inaccessibility of recordings to outsiders, protection of patient privacy.
· Informed consent procedure for patients.
· Obtaining patients' opinion about the consultation afterwards.
· High quality of recordings (video and audio).
· Documenting the results of self-assessments and feedback in a portfolio.
· Stimulating learning environment, supervisors which are motivated to improve themselves.

In our video-on-the-job set-up, all consultations of a resident's outpatient clinic are recorded when patients have provided informed consent. Participating patients fill in a questionnaire after the consultation to give their opinion about the patient-physician contact. We use a wide-angle camera and two separate microphones for the recordings. The camera is focused on the writing desk in the consulting room. Physical examinations and medical procedures are audio recorded, but not video recorded. After completing the clinic, the resident selects two consultations for self-assessment and for feedback and discussion with a supervisor. The selection is guided by the complexity of or communication obstacles in the consultation. Resident and supervisor assess the communication quality of the selected consultations with the CELI instrument which is a reliable and valid instrument for the assessment of physician competency in patient education [15,22]. Subsequently, they discuss the two selected consultations and the resident receives feedback from the supervisor both on strong points and on points for improvement of his communication competency. The medical content of each case is also discussed. After the feedback and discussion session, the resident documents the self-assessments and feedback in his portfolio and the recordings are destroyed.

Several video-on-the-job assessments are necessary to obtain a reliable and valid judgment of a resident's communication performance. For effi-

ciency reasons one could differentiate between residents in order to decide about the frequency of assessments. When a resident shows sufficient proficiency in a certain type of complex patient-education situation, this kind of consultation can be marked as an entrusted professional activity (EPA) in his portfolio [66].

Unfortunately, the average clinical-practice culture does not support teaching and learning of communication skills through deliberate practice [4,79-83]. However, video-on-the-job can only be successful if the working environment supports the teaching of communication. Supervisors should be skilled communicators themselves, they should participate in communication intervision, be able to assess the communication competency of their apprentices, and have the didactic skills for effective feedback and discussion. Since many experienced pediatricians do not possess the required competencies for this task, further training of supervisors is of utmost importance [4,66,84-86] in order to prevent the kind of supervision Sally received from John, and the kind of conversation she experienced with Peter's mother.

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Appendix 7.1: The four CELI subcompetencies and their matching skills

C = Control and rapport
- invitational start of the consultation
- summary of the foregoing (resumé)
- agreement upon the goal and subjects of the consultation
- guiding the course of the conversation, keeping to the prescribed conversational structure
- control of patient's attention to the conversation
- control of attention and participation if several interlocutors are present
- summary when changing to a new subject or closing the consultation
- general verbal and nonverbal presentation of genuineness, empathy, care, and competency
- announcing and explaining activities, such as physical examination or writing/typing

- reinforcement of patient behavior which benefits the conversation and relationship
- social conversation in order to show interest in the patient and put the patient at ease
- a clear and friendly completion of the consultation

E = Explaining
- true in content, realistic
- use of clear and comprehensible language (choice of words, short sentences)
- concise and structured with an introduction, sections, and short summaries
- interactive with pauses for reaction, dosed, guided by response - emotional or other
- fitting into the frame of reference of the patient
- convincing, vivid with appealing examples, referring to patient's experiences
- repetition and support with visual aids, leaflets, and internet sites
- checks of comprehension

L = Listening
- verbal and nonverbal attending behavior, encouragements to talk
- use of silence
- paraphrasing
- reflection of feelings and opinions
- asking correct open and closed questions to elicit facts, feelings, and opinions
- obtaining relevant information
- concretizing
- shading and confronting
- summarizing the patient's story

I = Influencing (= instruction, advice, consultation, counseling, deciding, support)
- offering suggestions (and no orders), leaving room for contemplation
- useful and acceptable phrasing of instructions and advice
- reinforcement of patient problem-solving behavior
- realistic presentation of advice, possibilities, promises, and limitations
- taking into account the 'bad news' nature of some information and advice
- counseling, assisting with difficult decisions
- constructive consultation and negotiation
- rephrasing a problem into a shared problem
- promoting the mutual acknowledgement of feelings and opinions
- phasing the decision-making process, offering time for contemplation
- making clear agreements and contingency plans
- checks of approval of suggestions, instructions, advice, decisions, and agreements
- offering educational material (leaflets, internet) and/or useful contact addresses
- offering personal support or professional help after the consultation

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Chapter 8

The effects of self-assessment and supervisor feedback on residents' patient-education competency using videoed outpatient consultations

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8.0 Abstract

Objectives
To determine the effects of residents' communication self-assessment and supervisor feedback on residents' communication-competency awareness, on their patient-education competency, and on their patients' opinion.

Methods
The program consisted of the implementation of a communication self-assessment and feedback process using videoed outpatient consultations (video-CAF). Residents wrote down communication learning objectives during the instruction and after each video-CAF participation. Residents' patient-education competency was assessed by trained raters, using the CELI instrument. Participating patients completed a questionnaire about the contact with their physician.

Results
Forty-four residents and 21 supervisors participated in 78 video-CAF sessions. After video-CAF participation, residents wrote down more learning objectives addressing their control and rapport skills and their listening skills. Video-CAF participation improved residents' patient-education competency, but only in their control and rapport skills. Video-CAF participation had no effect on patients' opinion.

Conclusions
Video-CAF appears to be a feasible procedure and might be effective for improving residents' patient-education competency in clinical practice.

Practice implications
Video-CAF could fill the existing deficiency of communication training in residency programs. However, clinical supervisors should be adequately trained to assess residents' communication and to give residents effective feedback.

8.1 Introduction

Since the introduction of competency frameworks in medical education, workplace-based assessment has come into focus for accountability and certification purposes, as well as for the steering and support of learning in clinical practice [1-6]. Valid workplace-based assessment requires reliable direct observations. To be effective as a learning tool, the assessment should also be followed by feedback fulfilling certain requirements [7-14].

The introduction of competency frameworks in medical-specialist training also encouraged the attention to communication in clinical teaching [15]. Nowadays, direct observation followed by effective feedback is considered to be a powerful means to teach communication skills in clinical practice [16-20]. Communication assessment and feedback have already featured in the training of general practitioners and primary care physicians for several decades as part of vocational training and certification. Workplace-based assessment of medical-specialist trainees' communication occurs less frequently [21,22]. Furthermore, research into the effects of workplace-based assessment on clinical performance remains underdeveloped [2,23].

Videoing real consultations for communication assessment and feedback purposes is nowadays a widely accepted and applied method in undergraduate medical education [24] and in general practitioners' vocational training [20,25-32]. Video review of patient encounters appears to improve students' self-assessment and communication performance [24]. Moderate effects on general practitioners' communication performance in daily practice were reported in a randomized controlled study investigating workplace-based assessment and feedback using videoed consultations [29]. Videoing residents' consultations for communication assessment and feedback remains uncommon and subject to debate [33-35]. This is regrettable, since video review has several advantages over direct observation by clinical supervisors [24,36-39]. One major advantage is the possibility of reflection based on self-observation. If reflection is guided by communication-behavior benchmarks, video review significantly improves self-assessment quality and communication self-awareness [12,24,40], which are prerequisites of communication behavior improvement [41,42].

The role of clinical supervisors is arguably crucial to attain valid assessments and to provide effective feedback. However, several studies have pointed to the supervisors' lack of sufficient insight into communication

skills [43,44], the unreliability of supervisors' assessments of residents' communication [6,45], and the inadequacy of supervisors' feedback to residents [21,44,46-49]. Supervisors should therefore be trained in communication-competency assessment and in the skills required to provide residents with effective feedback [1,4,9,22,24,49-53].

We investigated the effects of an innovative program for communication self-assessment complemented with supervisor feedback, on residents' communication-competency awareness and on their communication competency in general and their patient-education competency in particular. By patient-education competency, we refer to the proficient use of communication skills in order to influence the patients' knowledge, opinions, and health and illness behavior so as to ensure that the patient is able to cooperate effectively in deciding on the care which she/he receives, and can make the best possible contribution to that care [54]. The program focused on patient-education competency, since patient education takes place in almost all medical consultations, requires excellent performance of communication skills, and is therefore an essential component of the physician's role as a communicator [55]. The program consisted of the implementation of a procedure for communication self-assessment and supervisor feedback using videoed outpatient consultations, complemented with the training of supervisors and the instruction of residents. Residents' participation in the program was expected to:

1 enhance their awareness of their strong and weak points in communication (learning objectives);
2 improve their patient-education competency in outpatient consultations;
3 yield more positive opinions of their patients about their contact with the resident.

We also investigated whether resident characteristics, such as years in residency, gender, and background in communication-skills training, were related to residents' awareness of their communication competency, their patient-education competency, and their patients' opinion about the contact.

8.2 Methods

8.2.1 Video-CAF

The procedure for Communication Assessment and Feedback using videoed consultations, called video-CAF, consists of the video and audio recording of all consultations at a resident's outpatient clinic, conditional on patient consent. Physical examinations and medical procedures are audio recorded but not video recorded. Participating patients complete a questionnaire after the consultation to evaluate their contact with the resident. Their responses are fed back anonymously to the resident (see 8.2.5 Patient opinion). After completing the clinic, the resident selects two consultations for self-assessment and supervisor feedback. The selection is guided by the consultation's complexity or communication obstacles, as well as by the resident's communication learning objectives (see 8.2.4 Resident characteristics and self-assessment). Both resident and supervisor assess the communication quality in the selected consultations with the CELI instrument (see 8.2.2 CELI assessment). Subsequently, they discuss the two selected consultations guided by the resident's learning objectives and the CELI assessments. The medical content of both consultations is also discussed. The feedback discussion, which usually lasts 60 to 90 minutes, follows a preset agenda to guarantee the prerequisites of effective feedback. After the feedback discussion, the resident writes down a new list of learning objectives and documents the form in her or his portfolio. The new learning objectives are used as guidelines in the following video-CAF session, which is held between six and twelve months later.

The video-CAF process was implemented in 2009 in two departments of the University Medical Center Groningen, the Netherlands. A coordinator schedules the recording sessions and feedback discussions, arranges for consent from patients, collects the completed questionnaires, and manages the equipment and recordings. Consultation recordings are destroyed after the feedback discussion, unless patients consented to their use for research purposes.

We labeled each consultation used for self-assessment and feedback, with the resident's identification code, the *consultation number* indicating the successive number of each consultation, and the *video-CAF number* indicating whether the consultation was performed at the resident's first, second or third participation in the video-CAF process (values 0, 1 or 2).

8.2.2 CELI assessment

All consultations selected by the residents for self-assessment and feedback, were assessed by a trained rater using the CELI instrument [56]. Approximately half of these consultations were also independently assessed by a second trained rater for reliability analysis.

The CELI instrument assesses a physician's patient-education competency by assigning scores to the performance of separate communication skills. A communication skill is defined as a discrete and observable instance of verbal and/or non-verbal behavior (an utterance) by which the physician contributes to the efficient attainment of the conversational objectives [57]. The skills are grouped into four functional categories or subcompetencies: (1) control of the conversational flow and building rapport, (2) explaining, (3) listening, and (4) influencing. Appendix 8.1 contains an overview of the four subcompetencies and their matching skills. The performance of a skill is assessed on a four-point scale: -2 = poor, -1 = inadequate, +1 = adequate, +2 = good. If the physician does not perform a skill where the performance is advisable, the skill is scored -1 (= advisable) or -2 (= strongly advisable). The skills are evaluated for their intrinsic quality - how well the skill was performed - and for their contextual quality - the moment in the consultation at which the skill was performed [58]. Each of the physician's utterances receives a single score for the performance of the skill which the utterance represents. The score consists of the letter, denoting the subcompetency to which the skill belongs, and a performance score. For example, if a physician adequately reflects the feelings of the patient, this utterance is scored L+1, meaning that a listening skill was performed adequately. The time at which a specific skill was observed, and a short comment about the performance of that skill is also noted on the CELI scoring form. Depending on the goals and the consultation process, some skills are evaluated frequently, some skills only infrequently, and some skills are not relevant. The rules for these ratings are set out in an illustrated manual.

Based on the number of positive skill scores and negative skill scores four subcompetency scores (the *Control*, *Explaining*, *Listening*, and *Influencing* variables) and an overall competency score (the *CELI Score* variable) are calculated, ranging from 0 (disastrous performance) to 10 (excellent performance). A score of 5.0 represents an equal number of positive and negative skill scores and is interpreted as a mediocre performance. A score

of 6.7 represents twice the number of positive than negative skill scores and is interpreted as an adequate performance. The CELI instrument has good interrater reliability, convergent validity, and construct validity [56,59,60]. We tested the distributions of the four subcompetency scores and of the overall competency score for normality.

Residents and supervisors used a simplified version of the instrument for self-assessment and feedback since we found out that the original CELI instrument was too complicated and time-consuming for them to use. They only scored utterances representing the performance of striking skills, instead of scoring all resident's utterances in the consultation. Furthermore, they did not classify the skills in the four subcompetencies, but only provided positive or negative skill scores, along with a time mark and a short comment for narrative feedback purposes. Thus, only an overall competency score could be calculated from their assessments.

8.2.3 Supervisor training

Before taking part in the video-CAF process, supervisors were trained in communication assessment and in providing effective feedback. The training consisted of three small-group sessions (12 hours) complemented with two individual feedback sessions (4 hours). The small-group sessions contained instructions about the video-CAF procedure and CELI assessment, patient-education exercises with simulated patients, and feedback exercises. The individual feedback sessions consisted of videoing their own outpatient clinic, self-assessment, and receiving feedback from the facilitator.

8.2.4 Resident characteristics and self-assessment

Residents attended a two hours instruction session about the video-CAF procedure and CELI assessment prior to their first participation in the video-CAF process. During the instruction residents wrote down an initial list of communication learning objectives. The list consisted of as many *points-to-continue* and *points-to-improve* as they could think of. The list was used as a guide for the first feedback discussion with a supervisor. Residents also provided information about their background characteristics during the instruction. We recorded the following background characteristics: period between the starting date of residency training and the

videoed clinic (*years in residency*), *resident gender* (0 = male, 1 = female), and educational background in communication-skills training (CST) before graduation. We distinguished three categories of *CST background*: -1 = limited education in physician-patient communication (lectures and group discussions) but no genuine communication-skills training; 0 = average communication-skills training including history-taking role play, but limited education in patient education and challenging topics; and 1 = extensive communication-skills training including role play of history-taking, patient-education, and challenging consultations.

We collected the learning-objectives lists the residents completed during the instruction and those they completed after each feedback discussion. We tallied the points-to-continue and the points-to-improve from each learning-objectives list for further analyses. We also performed content analyses of the learning objectives and classified them into the four CELI subcompetencies to determine which type of skills the learning objectives addressed. Learning objectives that we could not classify into one of the subcompetencies, were classified as 'other'.

8.2.5 Patient opinion

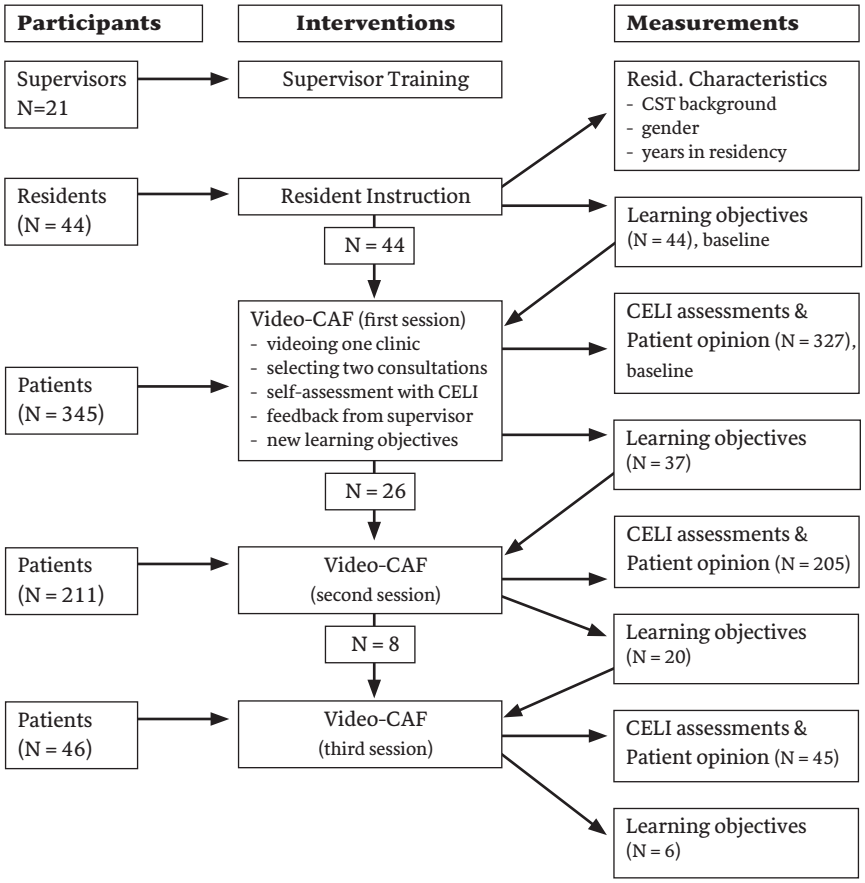
After the consultation the patient completed a questionnaire containing 10 items, each with a 10-points response scale. The questionnaire was intended to give residents feedback about their patients' opinions and the items identified the patient-education tasks reflected by the CELI subcompetencies in order to compare patient opinions with assessment scores, as suggested by others [61-65].

The average score of the items reflected the patient's general opinion about the contact, ranging from 1 = 'very poor' to 10 = 'outstanding'. Since the patients' responses of each clinic were collected and processed anonymously, we could not link their responses to the separate consultations. We therefore used the average of patients' general opinions, collected from each clinic, as the *patient opinion* variable (range 1 - 10) in our analyses.

8.2.6 Study design and statistical analyses

Figure 8.1 presents an overview of the participants, interventions, and measurements. The initial list of learning objectives were baseline mea-

Figure 8.1: Overview of participants, interventions, and measurements.



surements since they were written down during the instruction before the first video-CAF participation. The first CELI assessments performed by the raters and the first patient-opinion measurements were baseline measurements too since these data were obtained before the first self-assessment and supervisor feedback. Residents' first participation yielded new learning objectives and their second and third participation yielded subsequent CELI assessments, patient opinions, and new learning objectives. Supervisor trainings and resident instructions took place over a five year period and residents participated for the first time in the video-CAF process at different moments. Years in residency also differed among residents when they participated for the first time. Thus, the study design

controlled for potentially confounding variables related to history, maturation, selection, and instrumentation [66].

We calculated descriptive statistics of the number of learning objectives. Since these data were not normally distributed, we used the non-parametric Jonckheere-Terpstra test to detect trends in the median number of points-to-continue and points-to-improve over the video-CAF sessions. We also calculated Spearman correlation coefficients between the number of learning objectives and the resident characteristics.

The Control, Explaining, Listening, and Influencing subcompetency scores and the CELI scores were normally distributed which allowed for parametric testing. We calculated Intraclass Correlation Coefficients for absolute agreement ($ICC2_{A,1}$) between the two raters [67]. We also calculated means with standard errors of measurement (SEM) of the subcompetency scores and the CELI scores and product-moment correlation coefficients between the raters', residents', and supervisors' CELI scores. We compared their average CELI scores with t-tests.

We built and tested repeated measures multilevel regression models to explain the variance of the separate subcompetency scores and the overall CELI scores [68]. We first checked for the number of levels required. Two levels were sufficient for the regression models of the CELI scores (resident and consultation levels). We built null-models and models with the explanatory variables: video-CAF number, resident gender, CST background, and years in residency. We added consultation number as explanatory variable to the null-models in order to obtain more realistic variance estimates, since intercept-only multilevel models with repeated measures overestimate the variance at consultation level and underestimate the variance at the resident level [68]. The significance of the explanatory variables in the final models was determined by comparing the final model deviances (-2*loglikelihood) with the deviances of the models without the explanatory variables.

The patient-opinion scores, averaged per clinic, were normally distributed. To establish the relationships between patient opinion and the CELI competency and subcompetencies we calculated product-moment correlation coefficients between patient-opinion scores and the average CELI competency and subcompetency scores of each clinic.

We used IBM SPSS Statistics 20 [69] for the unilevel analyses and MLwiN 2.26 [70] for the multilevel analyses.

8.3 Results

8.3.1 Resident and video-CAF consultations characteristics

Forty-four residents (17 male, 27 female) and 21 supervisors participated in 78 video-CAF sessions. Eighteen residents participated once, 18 residents participated twice, and 8 residents participated three times (see Figure 8.1). The average period between successive participations was 9.3 months. Residents' mean years in residency was 2.54 years. Of the 623 consultations recorded (2 times 78 =) 156 were used for self-assessment and feedback. Patients' refusal to participate was approximately 10%. The questionnaire on the contact with their physician was completed by 599 patients (96% response rate). On average, 7.7 questionnaires were collected from each outpatient clinic.

8.3.2 Effects of video-CAF on learning objectives

We collected 107 learning-objectives lists. Fifteen lists were missing. On average, residents wrote down 6.70 learning objectives during the instruction, which number significantly increased after the first feedback discussion to 9.51 objectives and slightly decreased after successive feedback discussions (bottom row of Table 8.1).

The total number of learning objectives classified into the four subcompetencies (column 5 of Table 8.1), varied between 1.41 for the Control points-to-improve and 0.34 for the Influencing points-to-continue. A Friedman two-way analysis of variance revealed that the total number of learning objectives for Influencing (0.35 plus 0.34) was significantly lower than the total number of learning objectives for the other subcompetencies. The points-to-continue and the points-to-improve relating to the Control subcompetency as well as the points-to-improve relating to the Listening subcompetency significantly increased after the first feedback discussion (Jonkheere-Terpstra tests). The number of learning objectives classified into the other subcompetencies did not change after the successive discussions.

Table 8.1: Mean number of learning objectives after instruction and after feedback discussions.

Subcompetency		Mean no of learning objectives						
		Instruction	Feedback discussion			Total	Jonckheere-Terpstra Test	
			first	second	third			
	Points to	(N = 44)	(N = 37)	(N = 20)	(N = 6)	(N = 107)	Z-score	p =
Control	continue	0.41	0.81	0.75	1.50	0.67	3.33	0.001
	improve	0.98	1.70	1.90	1.17	1.41	2.35	0.019
Explaining	continue	0.73	0.70	0.85	0.67	0.74	0.24	
	improve	0.75	1.11	0.95	1.00	0.93	1.39	
Listening	continue	0.93	0.78	0.95	1.00	0.89	-0.06	
	improve	0.41	1.38	1.15	1.17	0.93	3.73	0.000
Influencing	continue	0.34	0.38	0.30	0.33	0.35	0.11	
	improve	0.30	0.43	0.35	0.00	0.34	-0.30	
Other	continue	1.14	1.49	1.70	0.67	1.34	1.30	
	improve	0.73	0.73	0.50	0.17	0.65	-1.18	
Total	continue	3.55	4.16	4.55	4.17	3.98	2.30	0.021
	improve	3.16	5.35	4.85	3.50	4.25	3.56	0.000
	Total	6.70	9.51	9.40	7.67	8.23	3.44	0.001

Table 8.2 presents the significant Spearman correlation coefficients between the number of points-to-continue and the number of point-to-improve, on the one hand, and residents' gender and CST background, on the other. Years in residency had a negative correlations with points-to-improve.

Table 8.2: Spearman correlations (Rho) between learning objectives and resident characteristics.

	Points to continue		Points to improve		Total	
Residents' characteristics	Rho	p =	Rho	p =	Rho	p =
CST background	0.27	0.006	0.25	0.010	0.30	0.002
Gender	0.34	0.000	0.29	0.002	0.35	0.000
Years in residency	0.01		-0.25	0.011	-0.15	

8.3.3 Reliability and means of CELI scores

Ninety-one of the 156 consultations selected for self-assessment and feedback, were assessed by two trained raters. The Intraclass Correlation Coefficient for absolute agreement ($ICC2_{A,1}$) between the two raters' CELI scores was 0.912, which indicates excellent reliability. The reliability coefficients of the subcompetency scores varied between 0.668 and 0.790 which are acceptable reliability values for research purposes [67]. We used the average scores of the two raters in our further analyses. We found an average overall CELI competency score of 6.24 (SEM = 0.087) and average subcompetency scores varying between 5.33 (SEM = 0.112) for the Listening subcompetency and 6.33 (SEM = 0.116) for the Influencing subcompetency.

Table 8.3 presents the average CELI scores of the raters, supervisors, and residents along with t-values for difference testing. The residents' average CELI score (6.77) was significantly higher than the raters' and supervisors' average CELI score (6.24 and 5.97).

Table 8.3: Means and t-tests of raters', supervisors', and residents' CELI scores.

CELI scores of	Mean	t-tests	
	(SEM, N)	Supervisors	Residents
Raters (average scores)	6.24	-1.63	3.70
	(0.087, 156)	n.s.	$p < 0.001$
Supervisors	5.97	-	4.20
	(0.145, 124)		$p < 0.001$
Residents	6.77		-
	(0.144, 125)		

Table 8.4: Two-level regression models of patient-education competency and subcompetency scores.

	Final models with explanatory variables (N = 156) [a]				
	CELI Score	Control	Explaining	Listening	Influencing
Fixed effects	Coeff. (SEM)	Coeff. (SEM)	Coeff. (SEM)	Coeff. (SEM)	Coeff. (SEM)
Intercept (γ_{000})	5.12 (0.272)	5.09 (0.391)	5.42 (0.273)	4.84 (0.289)	6.16 (0.169)
Video-CAF number (1, 2, 3)	-	0.44 (0.182)	-	-	-
Resident gender (0, 1)	0.55 (0.228)	0.75 (0.325)	-	-	-
Years in residency	0.24 (0.058)	0.18 (0.089)	0.25 (0.073)	0.16 (0.076)	-
Random effects					
Resident ($\sigma_{v0}{}^2{}_j$)	0.285 (0.112)	0.519 (0.228)	0.219 (0.173)	0.328 (0.199)	0.180 (0.161)
Consultation ($\sigma_{\varepsilon}{}^2{}_{ij}$)	0.751 (0.100)	1.715 (0.227)	1.905 (0.251)	1.935 (0.255)	1.864 (0.245)
Proportion of variance modelled:					
R^2 resident level	0.36	0.21	0.41	0.00	0.00
R^2 consultation level	0.04	0.09	0.03	0.03	0.00
Goodness of model fit					
-2*loglikelihood	434.270	557.912	558.002	565.848	552.538
X^2 (df)	17.745 (2)	17.513 (3)	11.635 (1)	4.452 (1)	-
(IGLS Deviance)	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.05$	-

[a] Only significant effects are presented

8.3.4 *Multilevel models of CELI scores*

Table 8.4 presents the two-level regression models of the raters' CELI competency and subcompetency scores. Residents' Control subcompetency scores improved over the video-CAF sessions with 0.44 score points per session. A further analysis revealed that this effect accounted for almost all variance modeled at the consultation level which was 9% of the total consultation level variance (R^2 consultation level). Video-CAF participation had no effect on the other subcompetencies. Female residents scored 0.55 points higher than male residents for the overall CELI competency and 0.75 points higher for the Control subcompetency. Years in residency improved all subcompetencies but the Influencing subcompetency with the largest effect on the Explaining subcompetency (0.25 score points per year). CST background had no effect on the CELI competency and subcompetency scores.

8.3.5 *Patient opinion*

Patient opinion correlated with the Explaining subcompetency (r = 0.28, N = 78, p = 0.015) and the Listening subcompetency (r = 0.31, N = 78 p = 0.006). The other subcompetencies, video-CAF participation, and resident characteristics were not related to patient opinion.

8.4 Discussion and conclusions

8.4.1 *Discussion*

Our first study objective concerned the effect of video-CAF on residents' awareness of their communication competency. As expected, by participating in the video-CAF process residents became more aware of their points-to-continue and points-to-improve in communicating with patients. They especially became more aware of their mediocre listening skills and their less than adequate control and rapport skills. These findings confirm others that video review improves the quality of self-assessment and communication awareness if clear benchmarks are provided [24,38,40]. However, learning objectives classified into the Influencing subcompetency were significantly less frequently recorded than learning objectives

belonging to the other subcompetencies and this number remained low even after the successive feedback discussions. Apparently, influencing skills are not regarded as important by residents and video-CAF participation did not focus the residents' attention to the Influencing subcompetency either. This finding accords with other studies which demonstrated that physicians use influencing techniques insufficiently in consultations [71,72].

Residents with more communication-skills training before graduation wrote down more learning objectives. These residents are apparently more aware of their communication competency. However, they did neither demonstrate better patient-education competency nor attained more positive patient opinions. These findings confirm the limited effects of communication-skills training on clinical communication performance and patient outcomes [73-83]. Since female residents wrote down more learning objectives than male residents, we conclude that female residents were more aware of their communication competency in clinical practice. They actually performed better as well, which concurs with other studies [56,84-87].

Our second study objective concerned the effect of video-CAF participation on residents' patient-education competency. Residents' patient-education competency improved, but only their competency in conversational control and building rapport (Control subcompetency) with 0.48 score points for each video-CAF participation. The effect is in line with the increase of the number of Control learning objectives mentioned before. Video-CAF had no effect on the residents' Listening subcompetency, although the listening skills got ample attention in the feedback discussions, as appears from the substantial increase in the number of points-to-improve for Listening. Apparently, residents' increased awareness of their mediocre listening skills did not result in actual improvement. A possible explanation could be that the Listening subcompetency is more case and context dependent than the Control subcompetency, which means that according to the dual-processing model of communication behavior change [42], improvement in the Listening subcompetency requires more deliberate practice than improvement in the Control subcompetency. The average residents' CELI scores in the assessed consultations was 6.24 meaning that their overall patient-education competency was lower than adequate (6.70). Residents valued their patient-education competency higher than raters and supervisors. This gap in assessment is consistent with other studies and could be a valuable parameter for feedback [43,88].

Years in residency had small to moderate effects on the overall patient-education competency and on three of the four subcompetencies. Since the residents were not taught clinical communication skills besides video-CAF, there appears to be a 'natural' growth in patient-education competency due to clinical experience. However, years in residency had no effect on the Influencing subcompetency. This finding confirms our suspicion that residents pay less attention to influencing skills than to other communication skills. If so, monitoring the supervisors' assessments and feedback would be necessary in order to reveal whether additional training is needed to correct this bias and attain improvement of all patient-education subcompetencies.

Video-CAF participation had no effect on patients' opinion about the contact with their physician. This finding contradicts our expectation concerning our third study objective and could be explained by the fact that video-CAF participation had no effect on the Explaining and Listening subcompetencies, which were related to patient opinion. Furthermore, patient opinions probably capture other qualities of communication than expert assessments, resulting in low correlations between patient assessments and expert assessments [59,62,89-92]. We therefore assume that the small improvements in residents' patient-education competency were not reflected in their patients' opinions as measured by our questionnaire.

8.4.2 Limitations

The robustness of our results and conclusions is affected by some limitations to our study.

First, the validity of our study could be jeopardized because we did not compare the patient-education competency of residents randomly assigned to participate in the video-CAF process, with residents randomly assigned to non-participation. However, the study design described in the Methods section controlled for potentially confounding variables. Thus, we assume that the effects of video-CAF participation that we found in this study are genuine.

Second, only 44 residents participated. Twenty-six of them participated in at least two sessions and 8 participated in three session. Whether more sessions with shorter time-intervals would yield more distinct results, should be the subject of further research. Third, the video-CAF program was implemented in only two departments of a university hospital.

Accordingly, further studies in other departments and in other hospitals should shed light on the generalizability of our findings. Fourth, this study only investigated the effects of video-CAF participation on residents' patient-education competency and on patient opinion and did not investigate the effects on other patient outcomes such as comprehension, recall, adherence, self-efficacy, behavioral change, self-management, and health status. Whether video-CAF participation could improve these patient outcomes should also be the subject of further research.

8.4.3 Conclusions

Competency-based postgraduate training requires workplace-based assessment of and feedback on residents' communication by clinical supervisors. However, communication assessment and feedback are almost completely lacking in residents' training programs. This study demonstrated that self-assessment of and supervisors' feedback on residents' communication using videoed outpatient consultations (video-CAF) is feasible and might be effective to improve residents' patient-education competency in clinical practice. Video-CAF participation improved residents' awareness of their communication competency and their skills of controlling the conversational flow and rapport. Influencing skills were probably insufficiently addressed during the feedback discussions and we suspect a bias in residents' self-assessments and in the supervisors' assessments and feedback in this respect.

8.4.4 Practice implications

Video-CAF could fill the existing deficiency of communication training in residency programs. In order to be successful clinical supervisors should be trained to assess residents' communication and to give residents effective feedback. Furthermore, monitoring and additional training could be necessary to prevent bias in supervisors' assessments and feedback.

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Appendix 8.1: The four CELI subcompetencies and their matching skills.

C = Control and rapport
- invitational start of the consultation
- summary of the foregoing (resumé)
- agreement upon the goal and subjects of the consultation
- guiding the course of the conversation, keeping to the prescribed conversational structure
- control of patient's attention to the conversation
- control of attention and participation if several interlocutors are present
- summary when changing to a new subject or closing the consultation
- general verbal and nonverbal presentation of genuineness, empathy, care, and competency
- announcing and explaining activities, such as physical examination or writing/typing
- reinforcement of patient behavior which benefits the conversation and relationship
- social conversation in order to show interest in the patient and put the patient at ease
- a clear and friendly completion of the consultation

E = Explaining
- true in content, realistic
- use of clear and comprehensible language (choice of words, short sentences)
- concise and structured with an introduction, sections, and short summaries
- interactive with pauses for reaction, dosed, guided by response - emotional or other
- fitting into the frame of reference of the patient
- convincing, vivid with appealing examples, referring to patient's experiences
- repetition and support with visual aids, leaflets, and internet sites
- checks of comprehension

L = Listening
- verbal and nonverbal attending behavior, encouragements to talk
- use of silence
- paraphrasing
- reflection of feelings and opinions
- asking correct open and closed questions to elicit facts, feelings, and opinions
- obtaining relevant information
- concretizing
- shading and confronting
- summarizing the patient's story

I = Influencing (= instruction, advice, consultation, counseling, deciding, support)
- offering suggestions (and no orders), leaving room for contemplation
- useful and acceptable phrasing of instructions and advice

- reinforcement of patient problem-solving behavior
- realistic presentation of advice, possibilities, promises, and limitations
- taking into account the 'bad news' nature of some information and advice
- counseling, assisting with difficult decisions
- constructive consultation and negotiation
- rephrasing a problem into a shared problem
- promoting the mutual acknowledgement of feelings and opinions
- phasing the decision-making process, offering time for contemplation
- making clear agreements and contingency plans
- checks of approval of suggestions, instructions, advice, decisions, and agreements
- offering educational material (leaflets, internet) and/or useful contact addresses
- offering personal support or professional help after the consultation

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Chapter 9

General discussion and conclusions

9.1 Introduction

From the historical overview presented in the Introduction, we concluded that it is doubtful whether medical specialists are sufficiently competent in providing effective patient education in clinical consultations. The primary aim of this thesis was to determine whether this judgment was correct by establishing medical specialists' competency in patient education. We also investigated how patient-education competency is acquired and how the teaching of patient-education competency in medical-specialist training could be improved. We have formulated six related research questions:

1 What factors determine the learning and performance of physicians' communication behavior?
2 How can we reliably and validly assess physicians' patient-education competency?
3 How great is the patient-education competency of residents and consultants during challenging consultations?
4 What is the effect of medical training and clinical experience on the patient-education competency of students, residents, and consultants?
5 How does case-specificity influence patient-education competency?
6 Could self-assessment of and supervisors' feedback on residents' communication performance improve residents' patient-education competency?

The general discussion contains six sections with our answers to the research questions, based on the studies included in this thesis. Each section starts with an overview of the study results in order to provide an answer to the question. Next we discuss the doubts that remain about the answer. The last section of the general discussion contains our conclusions and recommendations for clinical practice, medical education, and research.

Although the Chapter 2 study concerns physicians' communication competency in general, we will restrict the general discussion to medical-specialists' patient-education competency. Communication within the scope of other clinical tasks such as gathering diagnostic information, will not be addressed to any extent other than in passing.

9.2 Answers to our research questions

9.2.1 What factors determine the learning and performance of physicians' communication behavior?

In the Introduction, we concluded that the educational efforts to improve students' and physicians' communication behavior have been quite ineffective. In Chapters 2 and 7, we listed several factors, derived from the literature, which complicate the learning of professional communication. In Chapter 2, we presented the reflective-impulsive model of communication behavior which clarifies the factors influencing the learning and performance of professional communication behavior. The reflective-impulsive model is validated in other research areas, such as medical decision-making [1], decision-making by patients [2], and social behavior [3]. The model describes two processes that underlie communication behavior: a) a fast responding and associative impulsive system; and b) a slower responding and conscious reflective system.

The reflective-impulsive model allowed us to define communication skills and communication-skills training more accurately. We defined communication skills as a physician's discrete and observable verbal and/or non-verbal utterances that contribute to the efficient attainment of a conversational goal or strategy [4]. The mental representations of communication skills are part of communication schemata within the impulsive system. The execution of these skills is part of communication behavior. According to the model, communication-skills training implies the acquisition of new skills but also the incorporation of mental representations of these skills in communication schemata, and the formation of new links between these schemata and the mental representations of situations, in which the use of the skills and schemata is appropriate. Thus, the quality of communication-skill performance can only be evaluated in the light of the conversational goals and context.

The reflective-impulsive model also explains why the results of communication education fall below expectations. First, the formation in the impulsive system of new schemata and of new links between schemata and situational representations is a slow process that requires extensive practice. Second, communication behavior that is learnt in a specific context does not generalize easily to other contexts. Third, the reflective system that is essential for learning how to communicate in unfamiliar

situations or to attain new goals operates most efficiently at intermediate levels of arousal. When cognitive ambiguity or emotional arousal is present, the well-practiced, dominant responses in the impulsive system overrule the reflective system, resulting in reversion to and reinforcement of familiar but inadequate behavior.

Since there are many situations in which a physician must be able to communicate effectively and expert performance in these situation requires the acquisition of complex integrated systems of execution, monitoring, planning, and analyses of performance, the effect of communication education will be limited if the training is restricted to a limited number of exercises involving a predetermined set of skills in standardized situations. Instead, communication education should offer ample opportunities to exercise communication skills in a wide variety of realistic situations, should provide frequent and concise feedback, and should stimulate reflection on the process and outcome of the conversations practiced in order to form the required links in the impulsive system.

Ericsson's model of acquisition of expert performance through deliberate practice complements the reflective-impulsive model [5]. The deliberate-practice model has been tested in many fields of cognitive-skill and motor-skill acquisition and specifies the learning conditions needed to acquire expertise, which is defined as a stable superior ability to handle challenging situations effectively: (1) learning tasks with well-defined goals; (2) learning tasks of short duration with opportunities for immediate feedback, reflection, and corrections; (3) being motivated to improve; and (4) having ample opportunities for repetition, gradual refinements, and practice in challenging situations. The learning conditions required for the attainment of clinical-communication expertise are extensively described in Chapters 2 and 7. In the conclusions and recommendations section we summarize these learning conditions.

The reflective-impulsive and deliberate-practice models offer strong theoretical frameworks for the study of patient-physician communication in clinical practice and for the teaching of patient-physician communication in medical curricula. Research questions 4, 5 and 6 emanated from the models: (1) What is the effect of current communications skills training and clinical experience on patient-education competency? (2) What is the influence of case-specificity on patient-education competency? and (3) Does workplace-based learning improve patient-education competency?

9.2.1.1 Doubts about our answer to Question 1

The reflective-impulsive and deliberate-practice models originated from bioscience and social science with links to various neurobiological and psychological theories of behavioral control and learning. Although the reflective-impulsive and deliberate-practice models are well validated in various domains of skilled behavior, this is, to our knowledge, the first application of the models to physicians' acquisition of expertise in clinical communication. Thus, empirical support of the models in this domain is still lacking. It is particularly unclear whether expertise in clinical communication is acquired when all the learning conditions of deliberate practice are sufficiently fulfilled.

The reflective-impulsive is a general model describing the psychological process and matching influencing factors of communication-behavior creation. Since the communication schemata within the impulsive system and the conscious reasoning processes of the reflective system are empty entities in the model, the model does not address communication signals' content, form, and meaning, which are embedded in the communication schemata and are processed by reasoning. Furthermore, the reflective-impulsive model is restricted to individual psychological processes. The patient-physician interaction, with its characteristic communication elements such as mutual understanding, empathy, attraction, trust, and power, is beyond the scope of this model. However, the appraisal of communication signals into meaningful information is strongly dependent on previous experiences, is constructed during the interaction, and cannot be understood isolated from the relationship and its social context [6-8]. Since meaning, relationship, and social context are key determining factors of the conversational goals and process, and of the communication skills which a physician should master to attain these goals, the reflective-impulsive model was not much help in determining patient-education goals, skills, and matching learning objectives. Thus, we had to rely on other communication theories and empirical evidence to substantiate our recommendations for learning objectives in Chapters 2 and 7.

The deliberate-practice model is also restricted to *individual* learning and fails to explain how learning occurs in dynamic and complex social systems such as the clinical working environment [9]. Socio-cultural theories and narratives about students' initiation in clinical practice, which take into account social and cultural influences on individual learning,

provide better insight into the complexity of adapting communication behavior to the requirements of clinical practice [10-14].

Although our answers to the next research questions are jeopardized by our doubts about the reflective-impulsive and deliberate-practice models, we will not bring these doubts up every time in the ensuing sections.

9.2.2 How can we reliably and validly assess physicians' patient education competency?

Chapter 3 described the reliability and validity study of the CELI assessment instrument that we used in the five empirical studies of this thesis. The CELI model is based on the validated Yale model of persuasion [15], and contains the patient's information processing, contemplation, and decision-making that the physician must facilitate in order to achieve the patient-education goals in a consultation. The model subsequently describes the physician's corresponding tasks and their matching communication skills. The tasks or subcompetencies are: Control, Explaining, Listening, and Influencing. The tasks are comparable to the CanMEDS core communication competencies. The CELI instrument assesses how and when the skills are implemented for the efficient attainment of the conversational goals, and it provides performance scores for the four subcompetencies and provides an overall competency score. The overall competency score reflects the functional quality, that is, the effectiveness and efficiency of the patient education carried out by the physician. The scores range from 0 (= disastrous performance) to 10 (outstanding performance).

The interrater reliability of the overall competency scores was excellent in all studies varying between 0.943 [16] and 0.877 [17]. The interrater reliabilities of the subcompetency scores varied between 0.650 [18] and 0.909 [18], which are acceptable to good reliability values for research purposes [19]. The CELI instrument is sensitive to performance-quality differences. The instrument detects performance differences between physicians and also case-specific performance differences. A factor analysis of subcompetency scores with varimax rotated factors supported the model structure [18]. The CELI instrument yielded normally distributed scores in all our empirical studies.

We cross-validated the CELI instrument with two measurements of patient-centeredness [18]. All subcompetency scores and the overall com-

petency score correlated with both measurements ranging from 0.24 to 0.76. The validity of the CELI instrument is further supported by the relationships with other variables. We found relationships between CELI scores and gender in two studies [18,20]. These findings concur with those of others [21-24]. We also found positive correlations between one or more CELI subcompetencies, on the one hand, and patient satisfaction or patient's opinion about the contact, on the other, in four studies [17,18,20,25]. These relationships are substantiated by the findings of many others [26-31].

The CELI instrument has some advantages compared to other communication assessment instruments. First, the CELI instrument is based on a validated model of patient education and evaluates utterance effectiveness and efficiency in the attainment of the conversational goals. Almost all other instruments are based on the concept of patient-centeredness and assess required communication behaviors ordered according to the different consultation phases [32-35]. Since these instruments lack a theoretical basis which clarifies the shifting consultation goals and the physician's tasks with matching communication skills to attain these goals, they assess communication performance isolated from its functional context [36-42]. Second, other instruments use checklists or rating scales to ascertain whether communication skills are adequately performed. Adequacy is then judged against a relative performance standard. The CELI instrument provides more absolute quality standards of patient-education competency, since the subcompetency scores and overall competency score are based on the proportion of effective and ineffective utterances. In our studies, we used the following standards: an equal proportion of effective and ineffective utterances (score = 5), which reflects a mediocre performance; twice the number of effective to ineffective utterances (score = 6.7), which reflects an adequate performance; four times the number of effective to ineffective utterances (score = 8), which reflects a good performance; and nine times the number of effective to ineffective utterances (score = 9), which reflects an excellent performance.

9.2.2.1 Doubts about our answer to Question 2

The CELI instrument's construct validity is still weak. Although the communication skills that are assessed by the CELI instrument have been extensively studied and are proven to be effective in attaining the intended patient-education goals [18,26,43-50], until now the validity of the CELI instrument has only been tested in terms of patient satisfaction or patient

opinion as intermediate outcomes, and not tested in terms of more robust patient outcomes, such as comprehension, recall, adherence, self-efficacy, behavioral change, self-management, and health status. This also leaves the question as to which distinctive parts of patient-education behavior contribute to these outcomes. These outcomes could actually be more dependent on the patient-physician 'working alliance', than on the performance quality of distinctive communication skills [43,47,51].

Although a factor analysis of subcompetency scores supported the model structure, the subdivision of patient-education competency in the four subcompetencies and the allocation of skills are somewhat arbitrary. For example, the Control subcompetency could be divided into two equally important subcompetencies: a) control over the conversational flow, and b) building rapport and fostering the relationship. Although this subdivision would correspond to recommendations regarding a physician's communication tasks in a consultation, made by others [52-54], we decided not to make this subdivision because the skill scores belonging to each of the two new subcompetencies appeared to be strongly correlated, and the number of skill scores for these separate subcompetencies was rather low.

Our second doubt concerns the skill evaluation. The CELI assessment supposes that the assessor knows the consultation's patient-education goals set by the physician being assessed. Although the primary patient-education goals are usually quite clear, the more specific and shifting secondary or enabling goals are certainly not. They usually remain implicit for physician and patient, are often not corresponding, and both parties usually do not and even cannot indicate afterwards what has been achieved in the consultation. Thus, the assessor must deduce the goals and outcomes of the consultation from the flow and context of the conversation. Since there are many roads leading to Rome, the assessor must therefore partly speculate whether the performance of distinctive communication behaviors (utterances) is adequate at that moment in the consultation. This means that we do not know whether the patient-education competency, as assessed using the CELI instrument, corresponds to desired consultation outcomes, nor do we know whether the quality standards, which are based on the proportion of effective and ineffective utterances, reflect external benchmarks derived from more robust patient outcomes. The relationships we found with patient satisfaction scores are not very helpful in establishing these external benchmarks, since patient

satisfaction scores have a notoriously skewed distribution, have high average scores, and are lowly correlated with expert assessments [30,55-59].

Our doubts about CELI assessment validity also jeopardize the validity of the study results discussed in the subsequent sections. However, we will not bring these doubts up every time in the ensuing sections.

9.2.3. How great is the patient-education competency of residents and consultants during challenging consultations?

We established the patient education competency of residents and consultants in challenging simulated consultations (Chapters 4 and 5) and in real outpatient consultations (Chapters 3, 6, and 8). Since the outpatient consultations were selected for patient-education obstacles, we consider these consultations to be challenging too. Table 9.1 presents an overview of average CELI scores, obtained in the five studies, with percentages of average scores above 6.7, which means adequate performance.

Table 9.1: Average CELI scores of all studies with percentages of scores above 6.7 (= adequate performance).

	CELI scores			% higher
Study of Chapter	Mean	Std Dev.	N	than 6.7
3	5.46	1.47	30	20.0%
4	5.96	1.09	110	24.9%
5	6.03	1.24	100	29.4%
6	6.13	1.13	198	30.8%
8	6.24	1.09	156	33.7%
All studies	6.08	1.15	594	29.4%

The results of our empirical studies are consistent. On average, residents and consultants performed equally well in simulated and in real consultations. However, the average performance of both groups was lower than adequate. The average scores of the Listening subcompetency were consistently the lowest. Except for the study described in Chapter 6, we found no differences in the average subcompetency scores of residents and consultants. In the latter study, residents demonstrated better listening skills, while supervisors demonstrated better influencing skills. We did not find performance differences between challenging simulated consultations and real consultations either. Patient opinion was equally great for resi-

dents and supervisors. These findings support our conclusion that residents and consultants hardly differ at all in their patient-education competency. Thus, we conclude that on average residents and consultants lack the competencies for effective patient education in challenging simulated and real consultations. This answer is in line with our expectations based on the reflective-impulsive and deliberate-practice models, that is, that residents and consultants do not possess communication expertise, since the learning conditions to attain this expertise are not fulfilled in medical training and in clinical practice. The reflective-impulsive and deliberate-practice models also predict that clinical experience alone results in a 'satisfactory' performance level. Upon reaching this satisfactory level, performance becomes stable and increasingly automated. This automation could mean that time-efficiency and performance consistency improve, since the communication behavior would be more and more steered by the fast and stable impulsive system. Our findings provided only limited support for this hypothesis. The net consultation times became shorter, but only during residency. Consultation duration was longer for supervisors than for residents, when corrected for patient familiarity with department and physician. Furthermore, we found no relationship between clinical experience and performance inconsistency.

9.2.3.1 Doubts about our answer to Question 3

Table 1 presents the *average* patient-education competency, as assessed using the CELI instrument, and our answer does not take into account physicians' communication performance inconsistency, meaning that physicians' performance quality varies due to case-specificity. However, we found a fair amount of performance inconsistency for simulated consultations and outpatient consultations, meaning that physicians could perform adequately in some consultations, but inadequately in other consultations. Thus, we can only conclude from Table 1 that communication performance is adequate in the presented *percentages of consultations* regardless of which physicians performed the consultations. The percentages do not indicate how many *physicians* perform adequately in all their consultations. That number of physicians would be substantially smaller. In the section on Research Question 5, we elaborate on the performance inconsistency of residents and consultants.

9.2.4 *What is the effect of communication skills training and clinical experience on the patient education competency of students, residents, and consultants?*

According to Ericsson's model of deliberate practice, students will attain only a 'satisfactory' level in communication competency, but not the expertise level required by the CanMEDS framework. The model also predicts that clinical experience alone is not sufficient to reach an expert level either. In the cross-sectional study described in Chapter 4 [17], we tested these predictions. As expected, the effect on students' patient-education competency from successive communication courses in a curriculum appeared to be limited. Undergraduate training hardly improved students' patient-education competency at all in a challenging simulated consultation, despite the fact that third-year students and interns were taught supplementary skills for patient education, such as explaining and influencing. Apparently, these skills did not sink in. The residents, who received the same amount of communication training as interns, performed equally well on their subcompetencies and overall competency. Clinical experience had no effect on residents' communication competency, but appeared to have a positive effect on consultants' communication competency. We concluded that students' communication competency improved in their first year to a level that their teachers apparently consider satisfactory. This satisfactory level was also demonstrated by students in more senior years and by residents. The residents' clinical experience did not add to their competency, and consultants were also able to reach the same satisfactory level with their clinical practice. In the study described in Chapter 8 we demonstrated the significant effects of an educational intervention on residents' awareness of their communication competency and on their communication behavior in clinical practice. However, the intervention's effect on communication behavior was limited to the Control subcompetency [20].

The studies found in Chapters 5 and 8 confirmed the limited effects of previous communication-skills training on communication competency. In challenging simulated consultations, residents with more communication-skills training demonstrated higher communication competency than residents with less communication-skills training. However, the communication-skills training effect was only present in breaking bad news consultations and in requesting post-mortem and donation consul-

tations. Previous communication-skills training had no effect on performance in the negotiating and treatment-restrictions consultations [16]. The effect of communication-skills training appeared to be case-specific, meaning that communication skills that are learnt in a specific type of consultation and context, do not readily generalize to other consultations and contexts. Previous communication-skills training had no effect on performance in outpatient consultations either [20]. These findings confirm the limited effects of communication-skills training on clinical communication performance and patient outcomes found by others [59,60-69].

9.2.4.1 Doubts about our answer to Question 4

Although our findings correspond with those of others, our studies had some methodological weaknesses. The study described in Chapter 4 was cross-sectional and not a randomized controlled longitudinal study. Participants were not compared with themselves over the years and no control groups were used. Furthermore, the generalizability of our results and conclusions is also weak, since the students followed approximately the same curriculum and residents and consultants worked in the same hospital. The studies, in which we investigated the effect of previous communication-skills training and clinical experience on patient-education competency, were also cross-sectional and not randomized controlled studies. Residents' and consultants' previous communication-skills training and clinical experience were established as physician characteristics and were not manipulated in controlled studies. Thus, in the study found in Chapter 6 we could not properly distinguish the complementary effects of previous communication-skills training and clinical experience on patient-education competency, since there was a strong negative correlation between these effects. Junior residents received the most communication-skills training and had the least clinical experience; supervisors had no previous communication-skills training, but the most clinical experience.

9.2.5 How does case-specificity influence patient-education competency?

According to the reflective-impulsive model, learning new communication behavior not only implies the acquisition of new skills but also the incorporation of mental representations of these skills in communication

schemata, as well as the formation of new links between these schemata and the mental representations of situations, in which the use of the skills and schemata is appropriate. Thus, the reflective-impulsive model explains why communication behavior, which is learnt in a specific context, is not readily generalizable to other contexts, resulting in performance inconsistency due to differences in consultation case and context characteristics. The model predicts that performance inconsistency would be larger if the consultations are more dissimilar in goals, structure, and required skills. The study found in Chapter 5 described the effect of consultation-type similarity on performance inconsistency in simulated consultations. In this study, we also investigated the relationships between performance inconsistency, on the one hand, and patient-education competency and factors that influence patient-education competency, on the other.

In challenging simulated consultations, approximately half of the variation in patient-education competency can be attributed to differences between physicians, and half of the variation in patient-education competency is attributable to case differences with more performance inconsistency in consultations which are dissimilar in goals, structure, and required skills. Thus, we concluded that performance inconsistency is case-specific. The effect of previous communication-skills training on patient-education competency was dependent on similarity in goals, structure, and required skills, meaning that previous communication-skills training had a case-specific effect. Inconsistency and average competency were related for those consultation combinations that were dissimilar in goals, structure, and required skills. Previous communication-skills training had no effect on inconsistency.

In the Chapter 6 study we established performance inconsistency in outpatient consultations. Contrary to the expectations suggested by Reinders et al. [70], performance inconsistency appeared to be greater in outpatient consultations than in challenging simulated consultations. Inconsistency in outpatient consultations was comparable to inconsistency in simulated consultations that were dissimilar in goals, structure, and required skills. Thus, we conclude that the case-specific effects on patient-education competency in outpatient consultations are comparable to those effects in dissimilar simulated consultations. However, the assessed outpatient consultations were selected for patient-education obstacles. This could have resulted in greater performance inconsistency due to

selection bias, compared to the inconsistency in routinely-performed outpatient consultations.

9.2.5.1 Doubts about our answer to Question 5

In our study of performance inconsistency in challenging simulated consultations (Chapter 5) we compared residents' performance in only two consultations. We were unable to determine inconsistency between more than two consultations or between two identical consultations. The generalizability of the results of this study is also limited, since only residents in their first year of postgraduate training performed the challenging simulated consultations.

In our study of performance inconsistency in outpatient consultations (Chapter 6), we compared residents' and supervisors' performance in two to six consultations stemming from one to three clinics. However, we could not determine relationships between consultation similarity and inconsistency, since the goals, content, and required structure of these consultations could not be manipulated. Furthermore, the generalizability of our conclusions from the Chapter 6 study is limited, since only forty-four residents and fourteen supervisors from two clinical departments participated.

9.2.6 Could self-assessment of and supervisors' feedback on residents' communication performance improve residents' patient-education competency?

The video-CAF program described in Chapter 8 consists of a communication self-assessment and feedback process using videoed outpatient consultations complemented with supervisor training and resident instruction. For each video-CAF session, all the consultations at a resident's outpatient clinic are recorded, conditional on patient consent. After completing the clinic, the resident selects two consultations for self-assessment followed by feedback and discussion with a supervisor. The selection is guided by the complexity of or communication obstacles in the consultation, as well as by the resident's communication learning objectives. Thus, the selected consultations could be regarded as challenging. The resident and the supervisor assess the communication quality of the selected consultations with the CELI instrument. Subsequently, they discuss the resident's communication performance in the selected consul-

tations. After the feedback discussion, the resident writes down a new list of learning objectives.

By participating in the video-CAF process, residents became more aware of their communication competency, with the strongest effects on their awareness of their mediocre listening skills and, to a lesser extent, of their less than adequate control skills. Previous communication-skills training had a positive effect on residents' awareness of their communication competency, but no effect on their communication performance.

On average, residents demonstrated less than adequate patient-education competency in the selected consultations. Residents valued their patient-education competency higher than raters and supervisors. This gap in assessments is consistent with other studies and could be a valuable parameter for feedback.

The residents' Control subcompetency scores improved over the video-CAF sessions. Video-CAF participation had no effect on the residents' Listening subcompetency, although the listening skills received ample attention in the feedback discussions. We believe that the Listening subcompetency is more case-dependent and context-dependent than does the Control subcompetency, and requires more deliberate practice in order to improve than does the Control subcompetency. Years in residency improved all subcompetencies except the Influencing subcompetency. Since the residents were not taught clinical communication skills except through video-CAF, there appears to be a 'natural' growth in communication competency as a result of clinical experience. This finding runs contrary to our earlier findings that clinical experience had no effect on residents' communication competency in challenging simulated consultations (see Question 4).

Since the Influencing subcompetency was the least addressed in the lists of learning objectives and in the feedback discussions, and since years in residency had no effect on the Influencing subcompetency, we concluded that residents pay less attention to influencing skills than to other communication skills. Apparently, influencing is not regarded as important by residents and participation in the video-CAF process did not focus the residents' attention on the Influencing subcompetency either. Thus, we suspect a bias in the supervisors' assessment and feedback in this regard. Both monitoring supervisors' assessments and feedback, along with the additional training of supervisors, seem necessary.

The video-CAF program demonstrated that self-assessment of and supervisors' feedback on residents' communication using videoed outpatient consultations (video-CAF) is feasible and might be effective to improve residents' patient-education competency in clinical practice. The program could fill the existing deficiency of communication training in residency programs, provided that supervisors are properly trained in the assessment of residents' communication skills and in giving effective feedback to residents. However, from our study of residents' and consultants' communication performance in outpatient consultations described in Chapter 6, we concluded that supervising consultants do not possess superior patient-education skills required to act as credible role-models, coaches, and assessors in workplace-based learning aimed at improving residents' patient-education competency. This conclusion creates a problem for workplace-based assessment of and feedback on residents' communication competency, provided by supervisors. How acceptable is supervisors' feedback for residents when their supervisor's communication proficiency is comparable to their own proficiency? What could residents learn from these supervisors, especially in regard to our conclusion that influencing skills, which consultants performed better than did residents, are scarcely addressed in the feedback sessions? Thus, we recommended improvement of both residents' and supervising consultants' clinical communication by intervision, meaning mutual and egalitarian assessment of and feedback on communication competency in clinical practice instead of one-sided supervision of residents.

9.2.6.1 Doubts about our answer to Question 6

Although our repeated measures design controlled for most of the confounding variables, the validity of our video-CAF study could be jeopardized since we did not compare the communication competency of residents randomly assigned to participate in the video-CAF process, with residents randomly assigned to non-participation. The generalizability of our results and conclusions is also restricted, since the video-CAF procedure was implemented in only two departments of a university hospital, with a limited number of residents participating in one, two, or three video-CAF sessions. Whether more sessions, at shorter time-intervals, would yield more distinct results should be the subject of further research. Further studies in other departments and in other hospitals could also shed light on the generalizability of our findings.

9.3 Conclusions and recommendations

In this section we will present our general conclusions and recommendations for patient education in clinical practice, medical education, and research.

9.3.1 Clinical practice

According to the CanMEDS framework, physicians should demonstrate expertise in clinical communication, meaning that they should have a stable superior ability to communicate effectively with patients and relatives. However, we concluded that medical-specialist patient-education competency is less than adequate. We also found that their communication performance is not stable, but rather that it is inconsistent, meaning that patients might suffer from medical specialists' inferior communication in some consultations. Thus, the improvement of medical-specialist communication competency and consistency seems necessary. We believe that a major step in communication improvement in clinical practice would be the acceptance of a functional approach to clinical communication, meaning that medical specialists should aim at effectively and efficiently attaining SMART patient-education goals in their consultations. Smart is the acronym of [73]:

- **S**pecific: straightforward, not ambiguous.
- **M**easurable: it is clear under what conditions the goals are achieved.
- **A**cceptable: all stakeholders (patient, physician) should agree on the goals.
- **R**ealistic: the physician and patient should be able to achieve the goals.
- **T**ime-bound: it should be clear when the goals are achieved.

The CELI patient-education model [18] and other patient-education models [46,74-80] provide the possible goals and their matching communication skills. Medical specialists should identify the consultation's desired patient-education goals, monitor these goals during the consultation, and reflect on the consultation outcomes in order to establish whether the goals are efficiently achieved. Productive reflection could require patient debriefing after a consultation. In this way the deliberate practice of communication competency would become a natural part of clinical practice.

However, working with SMART goals brings two dilemmas to the fore. The first dilemma concerns patient's self-determination and freedom of choice. Although self-determination and freedom of choice are considered fundamental human rights in our society, the view of these concepts determines the patient-education goals a physician aims at in his consultations. Does self-determination and freedom of choice include decisions and behavior, which, according to healthcare providers, have detrimental effects on health and well-being? In other words, do healthcare providers have the right and responsibility to influence or even manipulate patients' decisions and behavior in order to attain 'healthier' behaviors? We believe that healthcare providers involved in patient education should discuss the moral boundaries of their patient-education rights and responsibilities in order to provide effective healthcare, but also to prevent the return of paternalism in healthcare and the intrusion of patient education in all sectors of public and private life promoted by some contemporary authors [81], but criticized by others 40 years ago [11,82,83].

The second dilemma involves whether all medical specialists could and should obtain expertise in all patient-education tasks. Some medical specialists' patient-education tasks are beyond discussion, since physicians are legally obliged to sincerely and thoroughly inform their patients and to obtain informed consent for medical procedures [84]. However, some other tasks such as promoting patient participation, patient autonomy, and shared decision-making as advocated in the memorandum of the Dutch National Board of Public Health [85] are questionable since the effects on intermediate outcomes such as adherence and self-management, and on health outcomes are not conclusive [86,87]. Furthermore, assigning more complex and time-consuming patient-educational goals to medical specialists, such as complex risk communication, attaining adherence, self-management, empowerment, and lifestyle change, is regarded as controversial. Although these goals should be aimed at achieving treatment effects, for which patients' active involvement is indispensable, such as adherence to medication regimes, abstaining from unhealthy behaviors, or physical exercise, medical specialists do not always acknowledge that the attainment of these patient-education goals is part of their job. They find themselves not properly trained for these tasks and do not feel supported in the performance of these tasks by their working conditions and working environment. Some effective patient-education tasks even arguably lie beyond the scope of their professional expertise, such as

motivational interviewing, cognitive behavioral therapy, and other psychotherapeutic techniques. Thus, complex patient-education tasks confront medical specialists and the healthcare system with a dilemma. Their effectiveness in attaining desired treatment outcomes is well established, but medical specialists are not sufficiently equipped and supported to perform these tasks successfully. A shift of patient-education tasks from medical specialists to other healthcare workers, such as nurse practitioners, specialist nurses, and medical psychologists, could partly solve this dilemma. Instead of taking full responsibility for all patient-education tasks and outcomes, medical specialists could limit themselves to monitoring patients and spotting cognitive, emotional, or behavioral problems, in which case the medical specialist should refer the patient to a healthcare worker with more competency in patient education and also more favorable conditions for carrying it out.

9.3.2 Medical education

Since the 1970s, communication-skills training has been part of undergraduate medical training and general practitioners vocational training. In the 1990s, communication-skills training has also been incorporated in some medical specialists' training of both residents and consultants. In the Introduction and from our studies, we concluded that the effects of training efforts have been quite disappointing. In the studies found in Chapters 2 and 7 we mentioned several factors which complicate the attainment of expertise in clinical communication, and we concluded that medical curricula and postgraduate training insufficiently provided the required learning conditions of deliberate practice to overcome these obstacles. We also provided recommendations for learning objectives and teaching methods for the attainment of professional expertise in patient education. In this section we will summarize the recommendations discussed in various chapters. Figure 9.1 presents the overview of recommendations presented in Chapter 2.

First, we propose using functional learning objectives derived from the goals and strategies of patient education in clinical practice. Just like patient-education goals, these learning objectives should be SMART formulated. We recommend learning objectives corresponding to the four CELI subcompetencies complimented by a higher order or meta-learning objective consisting of identifying SMART patient-education goals for

consultations, monitoring these goals during the consultation, and reflecting on consultation outcomes, supported by feedback of peers, teachers, supervisors, and patients.

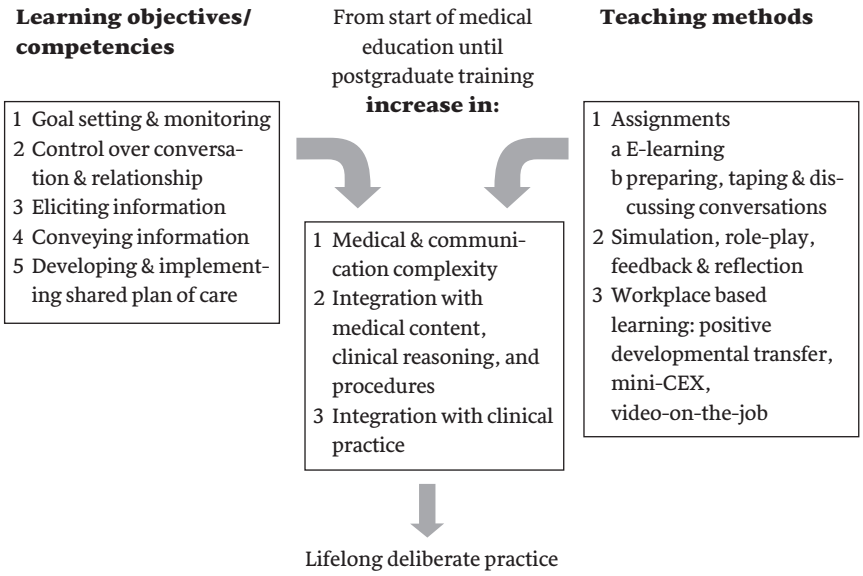

Figure 9.1: Overview of recommendations for learning objectives and teaching methods.

Second, we recommend using teaching and assessment methods which: (1) contain stimulating learning tasks with opportunities for immediate feedback, reflection, and corrections, and (2) provide ample opportunity for repetition, gradual refinements, and practice in a wide variety of consultations of increasing complexity. In Chapter 2, we discussed three teaching methods that could fulfill these requirements: (1) assignments, (2) simulation, and (3) workplace-based learning. Assignments are suitable for acquiring knowledge about clinical communication and skill performance and for stimulating goal setting and reflection. They should contain learning tasks of short duration with opportunities for immediate feedback, reflection, and corrections.

Role-play in simulated consultations, complimented by feedback and reflection, is probably the best known and most effective teaching method for communication-skills training. However, contrary to current practice, communication-skills training should provide ample opportunities

for all participants to repeatedly practice communication skills followed by feedback, reflection, and correction. Integration of simulations with the teaching of clinical knowledge, problem-solving, and practical skills could make the teaching of communication skills more effective and efficient but also more valued by faculty and students [88,89].

In the Introduction, we pointed to the problematic transfer to clinical practice of communication competency acquired in formal learning conditions. In Chapter 2, we mentioned two factors responsible for this lack of transfer. First, according to the reflective-impulsive model transfer to clinical practice will be less effective if the context in which skills are learned differs substantially from the context in which they must be applied. Several studies including our studies of inconsistency, described in Chapters 5 and 6, substantiate the case-specificity and context-specificity of communication-skills and communication-competency development [8,90-94]. In our studies, we found a fair amount of communication-performance inconsistency in simulated consultations and in outpatient consultations. Thus, we concluded that a set of generic or transferable communication skills, which show a high level of stability and have applicability to a wide range of encounters, does not exist, and that skill proficiency can only be attained if skills are practiced in a wide variety of realistic situations. Second, the transfer of learned communication skills to clinical practice not only requires that students learn how to use their skills in clinical conversations but students also have to adapt their learning to the culture of clinical practice [9]. This developmental transfer is often inhibited by the clinical culture and by supervisors' rejective behavior [8,9,89,95-102].

In our view and those of others [8,39,69], workplace-based learning and assessment is crucial to attain clinical communication competency. However, workplace-based learning can only be effective if it complies with the learning conditions of deliberate practice. Thus, workplace-based learning should offer ample opportunities to practice and reflect on communication performance in a wide variety of challenging consultations in order not only to improve performance quality but also to reduce performance inconsistency.

In Chapter 7 we discussed the advantages, requirements, and possible obstructions of videoing and discussing outpatient consultations in residency training. In the Chapter 8 study, we investigated the effects of self-assessment of and supervisors' feedback on residents' patient-education competency using videoed outpatient consultations (video-CAF).

Although the group of participating residents was small and almost all the residents participated in only one or two video-CAF sessions, participation in video-CAF improved residents' awareness of their communication competency and slightly improved their patient-education performance in clinical practice. Thus, we recommend implementing video-CAF or comparable processes as much as possible in residency training. However, video-CAF can only be successful if the working environment supports the teaching and learning of communication. In Chapter 6 we demonstrated that supervising consultants do not possess superior patient-education skills required to act as credible role-models, coaches, and assessors in workplace-based learning aimed at improving residents' patient-education competency. Consultants should first improve their patient-education competency through deliberate practice before they can act as supervisors in this respect. Thus, we recommended improvement of both residents' and supervising consultants' clinical communication by intervision, meaning mutual and egalitarian assessment of and feedback on communication competency in clinical practice, instead of one-sided supervision of residents.

We acknowledge that implementation and management of workplace-based learning and assessment is a tedious and lengthy process, especially when the clinical culture and working conditions oppose communication improvement through deliberate practice. Thus, the implementation of our recommendations would require a great deal of effort, and we doubt whether expertise in professional communication can be fully attained in clinical practice, given the current medical-specialist culture and working conditions. Instead, we propose that the CanMEDS communication competencies not be regarded as endpoints in medical education but as guidelines to improve communication competency through deliberate practice throughout a professional career.

9.3.3 Research

Our recommendations for research involve the further validation of: (1) the CELI instrument, (2) the reflective-impulsive and deliberate-practice models, and (3) the video-CAF process.

We acknowledge that the validity of the CELI instrument has not been thoroughly investigated yet. We also concluded that the relationships that

we found in our studies between CELI scores and patient satisfaction scores were not very helpful in establishing an external benchmark for the quality standards given by the CELI instrument. Thus, further studies of the CELI-instrument validity are needed to establish the relationships between the CELI-instrument scores and desired patient-education outcomes, and to find an external benchmark derived from robust patient outcomes. The construct validity of the CELI instrument could also profit from a study in which the CELI instrument is used to determine the patient-education competency of physicians who are notably able to achieve excellent patient-education outcomes, as suggested by others [33,103,104].

Our studies were the first to empirically test predictions derived from the reflective-impulsive and deliberate-practice models in the field of patient-physician communication. Thus, much terrain covered by these models still remains unexplored. However, we believe that these models could be very helpful in further developing our knowledge of clinical-communication performance and learning. We especially recommend studies of communication-competency development. Some examples of interesting study questions would be:

1 Do students, residents, or consultants attain more adequate levels or even expertise levels in clinical communication when the learning conditions for deliberate practice are (better) fulfilled?
2 Which factors not mentioned by the deliberate-practice model, such as developmental transfer, clinical culture, and societal influences, stimulate or inhibit communication competency development?

We believe that the video-CAF process could be an effective teaching method, provided that all requirements for its implementation in residency training, as mentioned in Chapters 7 and 8, are fulfilled. However, we need further studies to establish its validity. As a first step, we recommend a randomized controlled study with more participants in various departments of several teaching hospitals, in which workplace-based communication learning and assessment is highly valued. In this study residents should participate in more sessions with shorter time intervals and their working conditions should stimulate video-CAF participation. Participating staff should be selected for their educational motivation, good patient-education competency, and their willingness to participate in clinical communication video-CAF intervision. They should be trained

in communication assessment and feedback, their feedback quality should be monitored, and additional training or coaching should be provided if necessary. Furthermore, the study should not only assess patient opinion about the consultation but also more robust patient outcomes in order to establish the effects of video-CAF on patient outcomes as well as to provide video-CAF participants with valuable feedback.

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Chapter 10

Summary

10.1 Introduction

This thesis concerns the patient-education competency of medical specialists. Patient education is an essential component of the physicians' role as a communicator and physicians are supposed to be experts in patient education. By patient education, we refer to the use of educational methods to influence the patients' knowledge, opinions, and health and illness behavior in order to ensure that patients are able to cooperate effectively in deciding on the care they receive and can make the best possible contribution to that care. Patient-education expertise is defined as the stable superior ability to handle challenging patient-education conversations effectively. We investigated medical specialists' competency in patient education, how patient-education competency is acquired, and how the teaching of patient-education competency in medical-specialist training might be improved.

The first chapter contains a historical overview of patient education in medical consultations and of the teaching of communication skills in medical education. In the last fifty years both the patient-physician relationship and the healthcare system have changed substantially. Physicians are now legally obliged to inform their patients properly and to involve them in treatment decisions and their execution. Furthermore, the general public has become more aware of their rights, has learned to access medical information through electronic media, and has become more critical about the care they receive. These developments forced physicians to be more transparent about their work and achievements.

Since the early 1970s, communication-skills training has become more and more a part of medical education. Current medical curricula are nowadays outcomes-based or competency-based, which means that students and postgraduate trainees are taught the knowledge and skills required for medical expertise in clinical practice. Communication is regarded as one of the core competencies that a physician should master, and medical students are trained in communication skills, including patient-education skills, in various clinical situations.

Despite these societal and educational developments, medical specialists' communication with patients leaves a lot to be desired. Unfortunately, medical specialists are neither encouraged nor compelled to demonstrate excellence in patient education. Furthermore, the effects of undergraduate training on physicians' communication in clinical practice

are not impressive, and communication skills in general and patient-education skills in particular are scarcely addressed in medical-specialist residency training. Thus, it is doubtful whether medical specialists are sufficiently competent in providing effective patient education in clinical consultations. This thesis aims to determine whether this judgment is correct. The thesis also aims to determine how medical specialists' competency in patient education could be improved. We have formulated six related research questions:

1 What factors determine the learning and performance of physicians' communication behavior?
2 How can we reliably and validly assess physicians' patient-education competency?
3 How great is the patient-education competency of residents and consultants during challenging consultations?
4 What is the effect of medical training and clinical experience on the patient-education competency of students, residents, and consultants?
5 How does case-specificity influence patient-education competency?
6 Could self-assessment of and supervisors' feedback on residents' communication performance improve residents' patient-education competency?

10.2 Education in patient-physician communication: How to improve effectiveness

In Chapter 2 we presented the reflective-impulsive model of communication behavior, which clarifies the factors influencing the learning and performance of professional communication behavior. The reflective-impulsive model describes two processes which underlie communication behavior: a) a fast responding, associative impulsive system; and b) a slower responding and conscious reflective system. The reflective and impulsive systems process communication signals, either perceived or imagined, through different pathways. The reflective system processes communication signals through conscious reasoning. The signals are converted into meaningful information. This information is appraised by further reasoning to establish the problem requiring a communicative response. The goals and the communication strategies available to attain these goals are then considered. By further reasoning a decision is made

which activates appropriate communication schemata through the self-terminating mechanism of intending. Communication schemata are clusters of links of varying abstractness within the impulsive system. The impulsive system is conceived of as an associative memory network. In this system, perception triggers activation of elements, which then spread to other elements in proportion to the strength of their mutual links. Although the strength of the links is quite stable, motivation can guide the information processing, and steer behavior to approach or avoidance. The reflective and impulsive systems have a final common pathway through communication schemata to overt behavior.

According to the reflective-impulsive model, change in communication behavior implies not only the acquisition of new skills but also the incorporation of mental representations of these skills in communication schemata, and the formation of new links between these schemata and the mental representations of situations, in which the use of the skills and schemata is appropriate. The model also explains why the results of communication education fall below expectations. The formation in the impulsive system of new schemata and of new links between schemata and situation representations is a slow process that requires extensive exercise. Thus, communication behavior, which is learnt in a specific context, does not easily generalize to other contexts. The reflective system is therefore essential for learning how to communicate in unfamiliar situations or to attain new goals. However, the reflective process results in transitory behavior and operates most efficiently at intermediate levels of arousal. When cognitive ambiguity or emotional arousal is present, well-practiced, dominant responses in the impulsive system overrule the reflective system, resulting in reversion to and reinforcement of familiar but inadequate behavior. Since there are many situations in which a physician must be able to communicate effectively and since expert performance in these situations requires the acquisition of complex integrated systems of execution, monitoring, planning, and analyses of performance, the effect of communication education will be limited if the training consists of a limited number of exercises of a predetermined set of skills in standardized situations. Ericsson's model of acquisition of expert performance through deliberate practice complements the reflective-impulsive model and specifies the learning conditions to attain expertise:

(1) learning tasks with well-defined goals, (2) learning tasks of short duration with opportunities for immediate feedback, reflection, and corrections, (3) being motivated to improve, and (4) having ample opportunities for repetition, gradual refinements, and practice in challenging situations. In Chapter 2 and Chapter 7, the learning conditions required for the attainment of clinical-communication expertise are elaborated into recommendations for the learning objectives and teaching methods of communication education. Figure 2 in Chapter 2 and Figure 1 in the General discussion and conclusions chapter (Chapter 9) contain an overview of our recommendations.

10.3 Assessment of physician competency in patient education: Reliability and validity of a model-based instrument

Chapter 3 contains the study of the CELI instrument's reliability and validity in assessing a physician's competency in patient education. The instrument is based on a functional, patient-education model which includes the patients' processes of understanding, digesting, deciding, and behavior change. The physician must facilitate these processes in order to attain the patient-education goals in a consultation. The model subsequently describes the physician's corresponding tasks and their matching communication skills. The tasks or subcompetencies are: Control, Explaining, Listening, and Influencing. The CELI instrument assesses how and when skills are performed for the efficient attainment of the conversational goals and provides performance scores for the four subcompetencies and an overall competency score. The scores range from 0 (= disastrous performance) to 10 (outstanding performance).

Three raters assessed the patient-education competency of thirty medical specialists' outpatient consultations. The interrater reliability was excellent for the overall competency scores and adequate for the subcompetency scores. The instrument validity was supported by a factor analysis with varimax factor rotation, concordance with two instruments measuring patient-centered behavior, and relationships with physicians' gender and patient satisfaction. From this study we also concluded that the participating medical specialists possessed inadequate listening skills, mediocre control skills and no more than adequate explaining and influencing skills.

10.4 The communication competency of medical students, residents, and consultants

In the cross-sectional study described in Chapter 4, we investigated the effects of communication training and clinical experience on the patient-education competency of students, residents, and consultants. According to the deliberate-practice model's predictions, students will only attain a 'satisfactory' level in communication competency but not the expertise level required by competency-based frameworks. The model also predicts that clinical experience alone is not sufficient to reach an expert level either. In this study we tested these predictions by assessing the patient-education competency of novice students, first year students, third year students, interns, residents, and consultants in a simulated breaking bad news consultation, which is regarded as a challenging patient-education consultation. Three raters assessed the patient-education competency of 110 students and physicians with the CELI instrument. Our results concur with the findings of others that communication training in undergraduate curricula has a limited effect. Novice students, who had received no communication training at all, performed only slightly more poorly than the other groups. The Control, Explaining, and Influencing subcompetencies improved hardly at all from each level of training to the other. The Listening subcompetency had a curvilinear relationship, with novice students performing very poorly, interns performing almost adequately, and residents and consultants performing mediocrely. Contrary to our expectations, first and third year students and interns performed almost equally well in all subcompetencies. Apparently, the patient-education skills that were taught to students in their second to fourth year of medical training had not sunk in. We concluded that the communication skills of students improve in their first year to a level that their teachers apparently consider 'satisfactory'. Subsequently, their competency approximately remains at the same satisfactory level. Neither additional training nor clinical experience improves their competency any further. As a result, patient-education expertise is not achieved. This conclusion concurs with our expectations based on the deliberate-practice model.

10.5 Inconsistency of residents' communication performance in challenging consultations

The study described in Chapter 5 investigated the variation in physicians' individual patient-education performance over multiple consultations. This performance variability or inconsistency should be limited. Otherwise, patients might suffer from physicians' inferior communication performance in some consultations. Communication-skills programs assume that students acquire a generic set of communication skills that they can apply in a wide variety of consultations. However, performance inconsistency appears to be substantial when students or graduate physicians are assessed on communication performance in different consultations. The reflective-impulsive model explains why differences in consultation case and context characteristics result in communication-performance inconsistency. The model predicts that inconsistency will be greater if the consultations are more dissimilar in terms of the goals, structure, and required skills.

We investigated the effect of consultation-type similarity on performance inconsistency in challenging simulated consultations. We also investigated the relationships between performance inconsistency, on the one hand, and patient-education competency and factors that influence patient-education competency, on the other. In this study we assessed the patient-education competency of 50 residents, each performing two challenging simulated consultations.

We found that in challenging simulated consultations, approximately half of the variation in patient-education competency could be attributed to differences between physicians and half of the variation in patient-education competency could be attributed to case differences with more performance inconsistency in consultations which are dissimilar in goals, structure, and required skills. Thus, we concluded that performance inconsistency is case-specific. Previous communication-skills training also had a case-specific effect, meaning that previous communication-skills training was only related to patient-education competency in consultations where the goals, structure, and required skills were similar to those in the practice consultations. Inconsistency and average competency were related for those consultation combinations dissimilar in goals, structure, and required skills. Previous communication-skills training had no effect on inconsistency.

10.6 Residents' and supervisors' patient-education competency in outpatient consultations

In the study presented in Chapter 6, we compared supervisors' and residents' communication competency in general and their patient-education competency in particular in order to establish whether supervisors could act as credible role-models, coaches, and assessors of residents' patient-education competency. We also compared supervisors' and residents' consultation efficiency and the opinion of their patients about the contact with their physician in order to determine differences between supervisors and residents in consultation outcomes related to patient-education competency.

Forty-four residents and fourteen supervisors participated in the study. All consultations of between one and three outpatient clinics of each participating physician were videoed, resulting in 957 videoed consultations of 99 clinics. Each participant selected two consultations from each clinic resulting in 198 consultations selected for assessment.

On average, residents and supervisors demonstrated equal patient-education competency, although this competency was lower than adequate. Performance was adequate in only 31% of the consultations assessed. However, due to performance inconsistency, only 3% of the physicians ended up performing adequately in all their consultations. On average, the Listening subcompetency scored lowest of all subcompetencies. Supervisors demonstrated better influencing skills but poorer listening skills than residents. The performance inconsistency in outpatient consultations was comparable to the inconsistency in challenging simulated consultations that were dissimilar in goals, structure and required skills. Our findings demonstrated that almost all residents and supervisors lacked a stable superior patient-education competency in challenging outpatient consultations, which is the hallmark of patient-education expertise. We concluded that residents and supervisors do not achieve patient-education expertise, since the learning conditions for attaining expertise are not met in medical training and in clinical practice.

Residents' consultations became shorter during residency. Contrary to our expectations, supervisors' consultations lasted longer than residents' consultations, when consultation length was corrected for other influencing variables. Probably, supervisors are continuously urging their resi-

dents to perform their clinics efficiently, but they themselves are not called on to account for their own consultation efficiency. Our findings that consultation time was related to the Control and Listening subcompetencies support other studies demonstrating that effective patient-education strategies not only result in improved patient outcomes but also in more consultation efficiency. Patient opinion was almost equal for residents and supervisors, although patients expressed more trust in supervisors' general competency. Patient opinion was related to the Explaining and Listening subcompetencies.

This study demonstrated that supervising consultants do not possess the superior patient-education skills required to act as credible role-models, coaches, and assessors in workplace-based learning aimed at improving residents' patient-education competency. Supervisors need first to improve their own patient-education competency through deliberate practice before they act as supervisors in this respect. Thus, we recommended improvement of both residents' and supervising consultants' clinical communication by intervision meaning mutual and egalitarian assessment of and feedback on communication competency in clinical practice, instead of one-sided supervision of residents.

10.7 How to attain expertise in clinical communication

The paper comprising Chapter 7 analyzes why expertise in patient education is difficult to attain and provides recommendations for improving the teaching and learning of patient-education skills. We distinguished six factors which complicate the attainment of expertise in clinical communication: (1) trainees have to unlearn familiar, deeply rooted, but ineffective behavior; (2) communication competency has substantial content and context specificity; (3) communication is strongly connected to personality and maturation in private and professional life; (4) communication is dependent on content knowledge and clinical experience; (5) interim reflection on communication is difficult without hampering the conversational flow; and (6) communication-competency improvement is not encouraged since the effects of communication are subjectively shaped, consultation outcomes are often obscure, and the clinical culture is not supportive.

Medical curricula and postgraduate training provide the learning conditions of deliberate practice required to overcome these obstacles to an insufficient degree. Thus, students' and practicing physicians' communication competency will only reach a stable and an increasingly automated 'satisfactory' level.

Our recommendations relate to providing the learning conditions of deliberate practice in order to overcome the complicating factors. First, we propose to use functional learning objectives derived from the goals and strategies of clinical communication. These learning goals could be derived from the CELI model of patient education, which provides the four educational tasks and matching skills that a physician has to perform in a consultation in order to facilitate the information processing by the patient. Second, we recommend using teaching and assessment methods which: (1) contain stimulating learning tasks with opportunities for immediate feedback, reflection, and corrections; and (2) give ample opportunity for repetition, gradual refinements, and practice in a wide variety of challenging conversations. Video-on-the-job could fit these requirements and can be used to improve the competency in patient education of residents and medical staff in clinical practice. Video-on-the-job means self-assessment of and feedback on physicians' communication by peers, colleagues, or supervisors, using videoed consultations. Video-on-the-job has some major advantages over real-time assessment followed by feedback, such as mini-CEX. However, in order to be effective as a workplace-based learning tool, video-on-the-job requires: (1) a stimulating learning environment with colleagues and supervisors who are motivated to improve themselves; (2) a status of being regarded as a regular and natural part of training and continuous education; (3) a functional approach to self-assessment and feedback, meaning a focus on consultation goals, communication strategies, and consultation outcomes; (4) systematic planning of recordings and feedback sessions; (5) not only the informed consent of patients but also assessing patients' opinion, comprehension, and intentions afterwards; (6) high quality of recordings; (7) easy access to the recordings to physicians concerned, but no access for outsiders; and (8) documenting self-assessments and feedback in a portfolio in order to monitor progress. In the last section of this chapter we described the video-on-the-job program, called video-CAF, implemented in two departments of the University Medical Center Groningen.

10.8 The effects of self-assessment and supervisors' feedback on residents' patient-education competency using videoed outpatient consultations

The video-on-the-job program described in chapter 7 is further elaborated in this chapter. We determined the feasibility and effects of a video-on-the-job program, called video-CAF, on residents' communication-competency awareness, on their patient-education competency, and on their patients' views about the contact. The program consisted of the implementation of a communication self-assessment and feedback process using videoed outpatient consultations, complemented by supervisor training and resident instruction. Supervisor training consisted of three small group sessions, complemented by two individual feedback sessions, in which they received feedback on their own communication competency. Residents wrote down communication learning objectives consisting of as many points-to-continue and points-to-improve as they could think of, both during the instruction, and after each video-CAF participation. Residents' communication competency was assessed by two trained raters using the CELI instrument. Residents and supervisors used a simplified version of the CELI instrument for assessment. Patients' opinion about the contact with their physician was measured after each consultation, using a 10-items questionnaire.

Forty-four residents and 21 supervisors participated in the program. Seventy-eight clinics were videoed. Two consultations of each clinic were selected for assessment resulting in 156 consultations selected for assessment. By participating in the video-CAF process, residents became more aware of their points-to-continue and points-to-improve in communicating with patients, with the strongest effects on their awareness of their mediocre listening skills and, to a lesser extent, of their less than adequate control skills. These findings confirm those of others that video review improves the quality of self-assessment if clear benchmarks are provided. However, residents paid little attention to learning objectives that related to influencing skills.

The average residents' patient-education competency was lower than adequate. Video-CAF participation improved residents' skills in controlling the conversational flow and fostering the relationship (Control subcompetency) but not their other subcompetencies, although the listening skills received ample attention in the feedback discussions. We concluded

that the Listening subcompetency requires more deliberate practice in order to improve than does the Control subcompetency. The influencing skills were probably insufficiently addressed during the feedback discussions, and we suspect a bias in the supervisors' assessments and feedback in this respect.

Years in residency had a small to moderate effect on the overall patient-education competency and on three of the four subcompetencies, which indicates a 'natural' growth in patient-education competency due to clinical experience. Previous communication-skills training had an effect on the number of noted learning objectives, but had no effect either on patient-education behavior in the selected consultations or on patients' opinion. This finding confirms the limited effects of communication-skills training on clinical-communication performance and on patient outcomes.

This study demonstrated that self-assessment of and supervisors' feedback on residents' communication using videoed outpatient consultations (video-CAF) is feasible and might be effective in improving residents' patient-education competency in clinical practice. The video-CAF process could meet the existing deficiency of communication training in residency programs, provided that supervisors are properly trained in the assessment of residents' communication competency and in giving effective feedback to residents.

10.9 General discussion and conclusions

In Chapter 9 we presented our answers to the six research questions based on the studies included in this thesis, complemented by our remaining doubts about the answers. The last section of the general discussion contains our conclusions and recommendations for clinical practice, medical education, and research.

10.9.1 What factors determine the learning and performance of physicians' communication behavior?

We based our answer to this question on the reflective-impulsive model of communication behavior and on the model of acquisition of expert performance through deliberate practice. The reflective-impulsive model clari-

fies the factors influencing the learning and performance of professional communication behavior, and explains why the results of current communication education fall below expectations. The deliberate-practice model specifies the learning conditions for attaining communication expertise, which is defined as a stable superior ability to handle challenging conversations effectively. However, current communication education does not provide those learning conditions involving deliberate practice.

Although we believe that the reflective-impulsive and deliberate-practice models offer strong theoretical frameworks for the study of patient-physician communication in clinical practice and for the teaching of patient-physician communication in medical curricula, we also mentioned some limitations to the models such as their restriction to individual behavior and learning, which neglects the social dynamics of learning. In this thesis several predictions of the models were tested, and we based our recommendations for communication education on the models.

10.9.2 How can we reliably and validly assess physicians' patient-education competency?

In order to assess physicians' communication competency in general, and patient-education competency in particular, we constructed the CELI-assessment instrument based on a validated patient-education model. The CELI model describes the physician's communication tasks and their matching skills so as to attain the patient-education goals in a consultation. The tasks or subcompetencies are: Control, Explaining, Listening, and Influencing. The CELI instrument assesses how and when skills are performed, and provides performance scores for the four subcompetencies, along with an overall competency score. We used the CELI instrument in five empirical studies, and found excellent interrater reliabilities for the overall competency scores and acceptable to good interrater reliabilities for the subcompetency scores. We cross-validated the instrument with two measurements of patient-centeredness, and also established relationships with variables that are known to be related to physicians' communication competency.

Although the CELI instrument appears to be a reliable and valid instrument for assessing physicians' patient-education competency, the instrument still lacks sound construct validity since the CELI instrument has only been tested on patient satisfaction or patient opinion as intermediate

outcomes, and has not been tested on more robust patient outcomes such as comprehension, recall, adherence, self-efficacy, behavioral change, self-management, and health status. Thus, we still do not know whether the instrument's quality standards, which are based on the proportion of effective and ineffective utterances, reflect external benchmarks derived from these more robust patient outcomes.

10.9.3 How great is the patient-education competency of residents and consultants during challenging consultations?

The results of our empirical studies offer a consistent answer to this question. The average patient-education performance of residents and consultants was lower than adequate in all our studies, and both groups performed almost equally well in simulated and in actual consultations. In one study, residents demonstrated better listening skills, while consultants demonstrated better influencing skills. Thus, we conclude that, on average, residents and consultants lack the competencies for effective patient education in challenging simulated and actual outpatient consultations. This answer is in line with our expectations, based on the reflective-impulsive and deliberate-practice models, which were that residents and consultants do not possess communication expertise, since the learning conditions for achieving expertise are not met in medical training and in clinical practice.

We emphasize that our answer is based on average performance quality, as assessed using the CELI instrument, and does not take into account physicians' communication-performance inconsistency, meaning that physicians' competency varies due to case-specificity. However, we found a fair amount of performance inconsistency in two of our studies. Thus, the number of physicians performing adequately or better in all their consultations appeared to be substantially lower than the number of physicians receiving an adequate or higher average score for their consultations.

10.9.4 What is the effect of communication skills training and clinical experience on the patient-education competency of students, residents, and consultants?

In a cross-sectional study, we tested the predictions - based on the reflective-impulsive and deliberate-practice models - that the effects of under-

graduate communication education and postgraduate clinical experience on physicians' patient-education competency would be limited. Undergraduate training hardly improved students' patient-education competency at all in a challenging simulated consultation despite their participation in successive communication courses. Students attained a 'satisfactory' level in their early years, a level which was also demonstrated by students in their later, advanced-level years and by residents. Residents' clinical experience did not add to their competency and consultants were able to reach the same satisfactory level in clinical practice. Our other studies confirmed the limited effects of communication-skills training on communication competency. Thus, we concluded that the effects of communication-skills training and clinical experience are certainly not enough to improve physicians' patient-education competency so that it reaches an adequate level, let alone expertise. However, this conclusion must be regarded with some caution, since our studies had some methodological weaknesses. Our studies were cross-sectional and not randomized-controlled longitudinal studies. Thus, communication-skills training and clinical experience were not experimentally manipulated, and we could not properly distinguish the complementary effects of previous communication-skills training and clinical experience on patient-education competency.

10.9.5 How does case-specificity influence patient-education competency?

The reflective-impulsive model predicts that performance inconsistency due to differences in consultation case characteristics and context characteristics would be larger if the consultations are more dissimilar in goals, structure, and required skills. The study found in Chapter 5 tested this prediction.

We found that in challenging simulated consultations approximately half of the variation in patient-education competency could be attributed to differences between physicians, and half of the variation was attributable to case differences, with more performance inconsistency in consultations which were dissimilar in goals, structure, and required skills. Thus, we concluded that performance inconsistency was case-specific. Performance inconsistency in challenging outpatient consultations appeared to be comparable to performance inconsistency in challenging

simulated consultations that were dissimilar in goals, structure, and required skills.

In our study of performance inconsistency in simulated consultations, the effect of previous communication-skills training appeared to be case-specific, meaning that communication behavior that is learnt in a specific type of consultation and context, does not readily generalize to other consultations and contexts. Our study, in which we investigated the effects of video-CAF on residents' patient-education competency, confirmed the case-specific effects of previous communication-skills training.

10.9.6 Could self-assessment of and supervisors' feedback on residents' communication performance improve residents' patient-education competency?

We implemented a program for communication self-assessment of and supervisors' feedback on residents' communication performance using videoed outpatient consultations (video-CAF) in two departments of the University Medical Center Groningen. The program also contained supervisor training and resident instruction. By participating in the video-CAF process residents became more aware of their communication competency, with the strongest effects on their awareness of their mediocre listening skills and, to a lesser extent, of their less than adequate control skills. The influencing skills were the least mentioned as learning objectives. Video-CAF participation improved residents' skills in controlling the conversational flow and fostering the relationship (Control subcompetency). Video-CAF participation had no effect on the other subcompetencies. The video-CAF program demonstrated that self-assessment of and feedback on residents' communication by supervisors, using videoed outpatient consultations, is feasible and might be effective in improving residents' communication competency in clinical practice. The program could meet the existing deficiency of communication training in residency programs, provided that supervisors are properly trained in the assessment of residents' communication skills and in giving effective feedback to residents. However, our study of the efficiency and consistency of physicians' communication in outpatient consultations, summarized in 10.6, demonstrated that supervising consultants do not possess the superior patient-education skills required to act as credible role-models, coaches, and assessors in workplace-based learning aimed at improving residents' patient-educa-

tion competency. Thus, we recommended improvement of both residents' and supervising consultants' clinical communication by intervision, meaning mutual and egalitarian assessment of and feedback on communication competency in clinical practice instead of one-sided supervision of residents.

10.10 Conclusions and recommendations

In this section we presented our general conclusions and recommendations for patient education in clinical practice, medical education, and research. We concluded that medical specialists' patient-education competency was lower than adequate and was inconsistent. Thus, improvement of medical-specialist communication competency and consistency would seem to be necessary. The acceptance of a functional approach to clinical communication, meaning that medical specialists should aim at effectively and efficiently attaining SMART patient-education goals in their consultations, could be a major step towards improvement. SMART is the acronym of Specific, Measurable, Acceptable, Realistic, and Timebound. However, working with SMART goals gives rise to two dilemmas. The first dilemma involves patient's self-determination and freedom of choice. Do healthcare providers have the right and responsibility to influence or even manipulate patients' decisions and behavior in order to attain 'healthier' behaviors? The second dilemma concerns whether all medical specialists could and should acquire expertise in all patient-education tasks. Medical specialists are not sufficiently equipped and supported in order to perform complex patient-education tasks successfully, although the effectiveness of the methods concerned in reaching desired treatment outcomes is well established.

Although communication-skills training has been part of undergraduate medical training and general-practitioners vocational training for decades, the effects of these training efforts have been quite disappointing. We mentioned several factors that complicate the attainment of expertise in clinical communication, and we concluded that medical curricula and postgraduate training are insufficient in terms of providing the required learning conditions for deliberate practice in order to overcome these obstacles. We provided recommendations for learning objectives and teaching methods that are derived from these learning conditions.

First, we propose using functional learning objectives derived from the goals and strategies of patient education in clinical practice. Second, we recommend the use of teaching and assessment methods which: (1) contain stimulating learning tasks with opportunities for immediate feedback, reflection, and corrections; and (2) provide ample opportunity for repetition, gradual refinements, and practice in a wide variety of consultations of increasing complexity. In order to cope with the problematic transfer to clinical practice of the communication competency acquired in formal learning conditions, we recommend self-assessment of and supervisors' feedback on residents' communication competency using videoed consultations (video-CAF). Our video-CAF study demonstrated that video-CAF is a feasible and promising program for improving residents' communication competency. However, consultants do not possess the superior patient-education skills required to act as credible role-models, coaches, and assessors in workplace-based learning aimed at improving residents' patient-education competency. Thus, we recommend improvement of both residents' and supervising consultants' clinical communication by intervision, meaning mutual and egalitarian assessment of and feedback on communication competency in clinical practice, instead of one-sided supervision of residents.

Our research recommendations concern further validation of: (1) the CELI instrument, (2) the reflective-impulsive and deliberate-practice models, and (3) the video-CAF process. Further studies of the CELI instrument's validity are needed to establish the relationships between the CELI instrument's scores and desired patient-education outcomes, and to find an external benchmark derived from robust patient outcomes. We also recommend a study to assess the patient-education competency of physicians' who are notably able to achieve excellent patient-education outcomes.

We believe that the reflective-impulsive and deliberate-practice models could be helpful in further developing our knowledge of clinical-communication performance and learning. We therefore recommend further studies of predictions derived from these models about communication-competency development. The video-CAF process could meet the deliberate-practice requirements of attaining patient-education expertise in clinical practice. Thus, we recommend randomized-controlled studies of video-CAF implementation in residency training, including effect studies of video-CAF on residents' and consultants' patient-education competency as well as on robust patient outcomes.

Chapter 11

Nederlandse samenvatting

Hoofdstuk 1: Inleiding

Dit proefschrift gaat over de bekwaamheid van medisch specialisten in het geven van voorlichting aan hun patiënten. Patiëntenvoorlichting is een belangrijk onderdeel van de medische hulpverlening en artsen worden geacht deskundig te zijn in het geven van doeltreffende voorlichting. Onder patiëntenvoorlichting verstaan we het planmatige gebruik van communicatie om de kennis en opvattingen en het ziekte- en gezondheidgedrag van patiënten te beïnvloeden zodat een patiënt zo goed mogelijk kan meebeslissen over en kan meewerken aan de geboden zorg. Deskundigheid in patiëntenvoorlichting betekent dat een arts beschikt over een hoogwaardige en duurzame bekwaamheid in het doeltreffend omgaan met lastige patiëntenvoorlichtinggesprekken. We onderzochten hoe bekwaam medisch specialisten zijn in het geven van doeltreffende voorlichting, hoe zij zich deze bekwaamheid eigen maken en hoe hun bekwaamheid op een hoger plan kan worden gebracht.

Hoofdstuk 1 bespreekt de ontwikkeling van de patiëntenvoorlichting in medische consulten en de ontwikkeling van het communicatieonderwijs in de medische (vervolg)opleidingen in de afgelopen vijftig jaar. In deze periode zijn zowel de arts-patiënt relatie als ook de gezondheidszorg grondig veranderd. Artsen zijn tegenwoordig verplicht om hun patiënten goed te informeren en hen te betrekken bij de beslissingen over en de uitvoering van geneeskundige handelingen. Daarnaast zijn burgers zich bewuster geworden van hun gezondheidsrechten, hebben ze via internet en andere media tegenwoordig gemakkelijk toegang tot medische informatie en zijn ze ook kritischer geworden over de gezondheidszorg. Deze ontwikkelingen hebben artsen ertoe gedwongen om zich meer te verantwoorden voor hun manier van werken en de behaalde resultaten.

Vanaf de zeventiger jaren is het onderwijs in de arts-patiënt communicatie een steeds belangrijker onderdeel geworden van de medische opleiding. De huidige medische (vervolg)opleidingen zijn gericht op het aanleren van de bekwaamheden die een arts nodig heeft om als deskundige te kunnen functioneren in de klinische praktijk. Communicatie wordt beschouwd als één van de kernbekwaamheden en medisch studenten krijgen praktisch onderwijs in klinische communicatievaardigheden, waartoe ook behoren de vaardigheden voor patiëntenvoorlichting.

Ondanks al deze positieve ontwikkelingen schort er nog veel aan de communicatie tussen medisch specialisten en hun patiënten. Al het

onderwijs in communicatieve vaardigheden in de basisopleiding blijkt ook maar weinig effect te hebben op de kwaliteit van de communicatie in de klinische praktijk. Medisch specialisten worden bovendien niet aangemoedigd, laat staan gedwongen om hun patiënten doeltreffende voorlichting te geven en in de opleiding tot medisch specialist wordt maar mondjesmaat aandacht besteed aan het verbeteren van de communicatie met patiënten in het algemeen en aan het verbeteren van de patiëntenvoorlichting in het bijzonder. Daarom valt het te betwijfelen of artsen in opleiding tot medisch specialist en geregistreerde medisch specialisten voldoende bekwaam zijn in het geven van doeltreffende voorlichting aan hun patiënten. In dit proefschrift gaan we na of deze twijfel terecht is. Tevens hebben we onderzocht hoe de bekwaamheid van medisch specialisten in het geven van doeltreffende voorlichting kan worden verbeterd. Hiertoe hebben we zes onderzoeksvragen geformuleerd:

1 Welke factoren spelen een rol bij het aanleren en toepassen van doeltreffende arts-patiënt communicatie?
2 Hoe kunnen we de bekwaamheid in patiëntenvoorlichting van artsen op een betrouwbare en geldige manier beoordelen?
3 Hoe bekwaam zijn specialisten in opleiding en medisch specialisten in het geven van voorlichting aan hun patiënten?
4 Wat is het effect van medisch onderwijs en klinische ervaring op de bekwaamheid in patiëntenvoorlichting van studenten, specialisten in opleiding en medisch specialisten?
5 Welk effect hebben consultkenmerken op de bekwaamheid in het geven van voorlichting aan patiënten?
6 Kan zelfbeoordeling van de communicatie met patiënten aangevuld met feedback van klinisch supervisoren de bekwaamheid in patiëntenvoorlichting van specialisten in opleiding verbeteren?

Hoofdstuk 2: Hoe kan het onderwijs in arts-patiënt communicatie doeltreffender worden?

Hoofdstuk 2 bespreekt een model van beschouwend-spontaan handelen dat inzicht biedt in de factoren die een rol spelen bij het aanleren en toepassen van professioneel communicatief gedrag. Het model beschrijft twee elkaar aanvullende processen die het gedrag aansturen: (a) een snel reagerend, associatief en spontaan werkend systeem en (b) een langzaam

reagerend, beschouwend systeem. Deze systemen verwerken de binnenkomende communicatieve signalen die zowel uit de werkelijkheid als uit het eigen voorstellingsvermogen afkomstig kunnen zijn, op verschillende manieren. In het beschouwend systeem worden de signalen door middel van bewuste redenering verwerkt. Aan de signalen wordt een betekenis toegekend en op grond hiervan wordt besloten welke (communicatieve) reactie gepast is gezien de doelen van het gesprek. De bij deze reactie behorende communicatieschema's worden vervolgens geactiveerd. In deze communicatieschema's die deel uitmaken van het spontaan werkend systeem, zijn geheugenelementen van verschillende abstractieniveaus met elkaar verbonden. In het spontaan werkend systeem worden de signalen gekoppeld aan elementen in het geheugen, waarbij de snelheid en sterkte van de koppeling afhangt van reeds bestaande geheugenverbindingen tussen vergelijkbare prikkels en andere prikkels. De verbindingen in het spontaan werkende systeem zijn vrij stabiel, maar kunnen worden aangestuurd door de basale motivaties van toenadering of vermijding waardoor ze sterker of juist minder sterk kunnen worden. Zowel het beschouwend systeem en als het spontaan werkend systeem leiden uiteindelijk via de communicatieschema's tot het handelen.

Het model van beschouwend-spontaan handelen geeft aan dat verandering van communicatief gedrag niet alleen betekent dat er nieuwe vaardigheden moeten worden aangeleerd, maar ook dat de weergave van deze vaardigheden in het geheugen onderdeel moet gaan uitmaken van de communicatieschema's waarin het gebruik van de vaardigheden is gekoppeld aan de situaties waarin de vaardigheden doeltreffend kunnen worden toegepast. Dat verklaart waarom het resultaat van praktisch onderwijs in communicatievaardigheden in de medische (vervolg)opleidingen zo tegenvalt. In het spontaan werkend systeem verloopt de vorming van nieuwe communicatieschema's en van de koppelingen tussen deze schema's en de situaties waarin de schema's van nut zijn, langzaam en er is uitgebreide oefening nodig om deze nieuwe schema's en koppelingen tot stand te brengen. Communicatief gedrag dat is aangeleerd in een bepaalde situatie, zal daarom niet gemakkelijk veralgemeniseren naar andere situaties. Het beschouwend systeem is dan ook onmisbaar om nieuwe vaardigheden te leren en om vaardigheden doeltreffend te leren gebruiken in nieuwe situaties. Het gedrag dat zo ontstaat, is echter nog niet hecht verankerd in het gedragsrepertoire. Bovendien werkt het beschouwend systeem het beste bij een matig niveau van waakzaamheid. Bij dub-

belzinnigheid van de situatie of bij emotionele opwinding zullen de stabiele reacties in het spontaan werkend systeem gaan overheersen met als gevolg dat wordt teruggevallen op vertrouwde, maar ondoeltreffende gedragingen, terwijl deze reacties ook nog eens worden versterkt in het spontaan werkend systeem. Aangezien een arts in staat moet zijn om doeltreffend te communiceren in veel verschillende situaties en aangezien deze deskundigheid vereist dat de arts zich ingewikkelde, samenhangende communicatieschema's eigen maakt om zijn communicatieve handelen goed te kunnen voorbereiden, toepassen, bewaken en bijsturen, zal communicatieonderwijs maar weinig effect sorteren als dit onderwijs zich beperkt tot het aanleren van een vastliggend pakket aan vaardigheden in een beperkt aantal situaties. Het model van Ericsson dat beschrijft hoe deskundigheid wordt verkregen door middel van doelbewust oefenen, vormt een aanvulling op het model van beschouwend-spontaan handelen. In dit model wordt onder deskundigheid verstaan het hoogwaardig en duurzaam vermogen om doeltreffend om te gaan met lastige situaties. Volgens het model moet een leersituatie voldoen aan de volgende oefenvoorwaarden om deze deskundigheid te bereiken:

1 leeropdrachten met duidelijk omschreven doelen;
2 leeropdrachten die kort duren en die de gelegenheid bieden tot directe feedback, overdenken en verbeteren;
3 gemotiveerde leerlingen;
4 veel gelegenheid tot herhaling, stapsgewijze verbetering en oefenen in steeds lastiger situaties.

In de hoofdstukken 2 en 7 hebben we deze oefenvoorwaarden voor het verwerven van communicatieve deskundigheid in de klinische praktijk verder uitgewerkt tot aanbevelingen voor leerdoelen en onderwijsvormen voor het medisch communicatieonderwijs. Figuur 2 in hoofdstuk 2 en figuur 1 in hoofdstuk 9 bevatten een overzicht van deze aanbevelingen.

Hoofdstuk 3: De betrouwbaarheid en geldigheid van een instrument om de bekwaamheid van artsen in patiëntenvoorlichting te beoordelen

Hoofdstuk 3 bespreekt de resultaten van een onderzoek naar de betrouwbaarheid en geldigheid van een instrument om de bekwaamheid van

artsen in het geven van voorlichting aan patiënten te beoordelen. Het instrument is gebaseerd op een model dat uitgaat van de doelen van patiëntenvoorlichting en de verwerkingsprocessen die zich bij de patiënt afspelen, te weten het cognitief begrijpen en emotioneel verwerken van de informatie en het komen tot een beslissing, tot een gedragsvoornemen en uiteindelijk tot gedragsverandering. In een consult dient een arts deze verwerkingsprocessen te bevorderen om de gestelde voorlichtingsdoelen te bereiken. Het model geeft aan welke voorlichtingstaken een arts hiervoor moet uitvoeren en welke vaardigheden daarvoor nodig zijn. Deze voorlichtingstaken of deelbekwaamheden zijn: **R**egie over het gesprek en bewaken van de verstandhouding, **U**itleg geven, **L**uisteren en **O**verleggen. Het RULO instrument beoordeelt of de betreffende vaardigheden doeltreffend zijn toegepast en levert scores op voor de vier deelbekwaamheden en voor de algemene voorlichtingbekwaamheid. Het scorebereik loopt van 0 (rampzalige voorlichtingsbekwaamheid) tot 10 (uitmuntende voorlichtingsbekwaamheid).

Drie beoordelaars beoordeelden de voorlichtingbekwaamheid in dertig poliklinische consulten van dertig verschillende medisch specialisten. De inter-beoordelaar betrouwbaarheid was uitstekend voor de algemene bekwaamheidscores en voldoende voor de deelbekwaamhedenscores. De geldigheid van het RULO instrument werd ondersteund door een varimax factor analyse van de deelbekwaamhedenscores, door de samenhang tussen de RULO scores en de scores van twee instrumenten die de mate van patiëntgericht gedrag van artsen meten, en door de samenhang met het geslacht van de arts en met de tevredenheid van de patiënten. Op grond van onze bevindingen stelden we tevens vast dat de medisch specialisten die aan het onderzoek meededen, onvoldoende luistervaardigheden bezaten, matig bekwaam waren in het regie voeren en net voldoende uitleg- en overlegvaardigheden bezaten.

Hoofdstuk 4: De communicatiebekwaamheid van studenten, specialisten in opleiding en medisch specialisten

In het dwarsdoorsnedenonderzoek dat wordt beschreven in hoofdstuk 4, onderzochten we het effect van communicatieonderwijs en klinische ervaring op de bekwaamheid in patiëntenvoorlichting van studenten, medisch specialisten in opleiding en geregistreerde specialisten. Volgens

het model van doelbewust oefenen komt de communicatiebekwaamheid van studenten slechts op een 'aanvaardbaar' niveau en niet op het deskundigheidsniveau dat wordt vereist volgens de op bekwaamheden gebaseerde onderwijsmodellen. Het model voorspelt ook dat alleen klinische ervaring niet genoeg is om het deskundigheidsniveau te bereiken. In het onderzoek hebben we deze voorspellingen getoetst door de bekwaamheid in patiëntenvoorlichting van beginnende studenten, eerstejaars studenten, derdejaars studenten, coassistenten, artsen in opleiding tot medisch specialist en geregistreerde specialisten te beoordelen in een nagebootst slecht-nieuwsgesprek. Het slechtnieuwsgesprek wordt in het algemeen gezien als een lastig soort gesprek.

Drie beoordelaars beoordeelden de bekwaamheid in patiëntenvoorlichting van 110 studenten en artsen met het RULO instrument. De resultaten kwamen overeen met de bevindingen van anderen dat communicatieonderwijs in de medische vooropleiding maar weinig effect sorteert. Beginnende studenten die nog helemaal geen communicatieonderwijs hadden gehad, deden het maar weinig slechter dan de andere groepen. De Regie, Uitleg en Overleg deelbekwaamheden verbeterden nauwelijks in de opeenvolgende studiejaren. Voor de Luister deelbekwaamheid vonden we een kromlijnig verband, waarbij beginnende studenten het ronduit slecht deden, coassistenten een bijna voldoende scoorden en artsen in opleiding tot specialist en geregistreerde specialisten matig presteerden. Tegen onze verwachtingen in bleken de eerstejaars en derdejaars studenten en de coassistenten vrijwel gelijk te presteren voor alle deelbekwaamheden. Blijkbaar waren de patiëntenvoorlichtingvaardigheden die de studenten waren onderwezen in hun tweede tot vierde studiejaar, niet blijven hangen. We kwamen tot de slotsom dat de communicatieve vaardigheden van studenten verbeteren in hun eerste studiejaar tot op een niveau dat hun docenten blijkbaar aanvaardbaar vinden. Aanvullend onderwijs en klinische ervaring leiden niet tot een verdere verbetering van deze bekwaamheid met als gevolg dat het niveau van deskundigheid in patiëntenvoorlichting niet wordt bereikt. Deze constatering komt overeen met onze verwachtingen op basis van het model van doelbewust oefenen.

Hoofdstuk 5: De wisselvalligheid van de communicatie kwaliteit van specialisten in opleiding in lastige consulten

De variatie in de kwaliteit van de voorlichting die artsen geven in verschillende consulten, was het onderzoeksthema van hoofdstuk 5. Deze variatie in kwaliteit wijst op een wisselvallige bekwaamheid en dient beperkt te zijn. Zo niet, dan ondervinden sommige patiënten nadeel van de ontoereikende voorlichtingskwaliteit in hun consulten.

De programma's voor medisch communicatieonderwijs gaan ervan uit dat studenten een pakket aan communicatievaardigheden aanleren dat ze in zeer uiteenlopende consulten kunnen gebruiken. De communicatie kwaliteit blijkt echter behoorlijk te variëren als studenten of afgestudeerde artsen worden getoetst in verschillende consulten. Het model van beschouwend-spontaan handelen verklaart hoe verschillen in consultkenmerken kunnen leiden tot deze wisselvallige communicatiebekwaamheid. Het model voorspelt dat de wisselvalligheid groter zal zijn als de consulten minder op elkaar lijken wat betreft hun doelen, opbouw en benodigde communicatievaardigheden.

We onderzochten het effect van de mate van overeenkomst tussen consulten op de wisselvalligheid in communicatie kwaliteit in nagebootste lastige consulten. We onderzochten tevens de samenhang tussen deze wisselvalligheid enerzijds en de algemene mate van bekwaamheid en enkele factoren die van invloed zijn op deze bekwaamheid anderzijds. Voor dit onderzoek hebben we de bekwaamheid in patiëntenvoorlichting van 50 specialisten in opleiding beoordeeld in telkens twee lastige nagebootste consulten.

In de nagebootste consulten bleken de verschillen tussen de artsen ongeveer de helft van de variatie in de bekwaamheid in patiëntenvoorlichting te kunnen verklaren; de andere helft van de variatie in bekwaamheid kon worden toegeschreven aan verschillen tussen de consulten, waarbij er meer wisselvalligheid in de bekwaamheid bleek te bestaan als de consulten minder op elkaar leken wat betreft hun doelen, opbouw en benodigde vaardigheden. We stelden dan ook vast dat deze wisselvalligheid in bekwaamheid afhankelijk is van de consultkenmerken. Het effect van communicatieonderwijs in het verleden op de voorlichtingbekwaamheid bleek eveneens afhankelijk te zijn van de consultkenmerken, dat wil zeggen dat we alleen een samenhang vonden tussen dit onderwijs en de voorlichtingbekwaamheid als de consulten wat betreft hun doelen,

opbouw en benodigde vaardigheden leken op de consulten waarmee in het onderwijs was geoefend. De wisselvalligheid in bekwaamheid en de algemene bekwaamheid bleken met elkaar samen te hangen, maar alleen als de consulten minder op elkaar leken wat betreft hun doelen, opbouw en benodigde vaardigheden. Er bleek geen verband te bestaan tussen het communicatieonderwijs in het verleden en de wisselvalligheid in bekwaamheid.

Hoofdstuk 6: De bekwaamheid in patiëntenvoorlichting van medisch specialisten in opleiding en van hun supervisoren

Om na te gaan of klinisch supervisoren geloofwaardig zijn als rolmodel, begeleider en beoordelaar van de bekwaamheid van specialisten in opleiding in het geven van voorlichting aan patiënten vergeleken we in het onderzoek dat wordt beschreven in hoofdstuk 6, de communicatiebekwaamheid in het algemeen en de bekwaamheid in patiëntenvoorlichting in het bijzonder van artsen in opleiding tot medisch specialist en van de medisch specialisten die hen superviseren. We vergeleken ook de doelmatigheid van de consulten van de specialisten in opleiding en van hun supervisoren en we vergeleken de mening van hun patiënten over het contact om na te gaan in hoeverre er verschillen bestaan tussen specialisten in opleiding en hun supervisoren wat betreft consultuitkomsten die samenhangen met de bekwaamheid in patiëntenvoorlichting.

Vierenveertig specialisten in opleiding en veertien supervisoren deden mee aan dit onderzoek. Van iedere deelnemer werden alle consulten van één, twee of drie spreekuren op video opgenomen, mits de patiënt daarvoor zijn toestemming had gegeven. Dit leverde video-opnames op van 957 consulten afkomstig van 99 spreekuren. Elke deelnemer koos per spreekuur twee consulten uit om te beoordelen. Er werden dus 198 consulten beoordeeld. De bekwaamheid in patiëntenvoorlichting van specialisten in opleiding en van hun supervisoren bleek in het algemeen van hetzelfde, maar te lage niveau te zijn. Slechts in 31% van de consulten toonden de artsen voldoende bekwaamheid. Wanneer men echter rekening houdt met de wisselvalligheid in voorlichtingbekwaamheid in de verschillende consulten, dan toonde slechts 3% van de artsen voldoende bekwaamheid in al hun consulten. In het algemeen scoorde de Luister deelbekwaamheid het laagste van alle deelbekwaamheden. De geregis-

treerde specialisten beheersten de overlegvaardigheden beter dan de specialisten in opleiding, maar zij beheersten de luistervaardigheden juist minder goed. De wisselvalligheid in bekwaamheid was in de poliklinische consulten vergelijkbaar met de wisselvalligheid die we in een eerder onderzoek vonden in lastige nagebootste consulten die weinig op elkaar leken wat betreft hun doelen, opbouw en benodigde communicatievaardigheden. Dit onderzoek toonde derhalve aan dat de bekwaamheid in patiëntenvoorlichting in lastige consulten van vrijwel alle deelnemende specialisten in opleiding en van superviserende specialisten onvoldoende hoogwaardig en duurzaam is om te kunnen voldoen aan de kwaliteitseisen die wijzen op deskundigheid. We stelden vast dat specialisten in opleiding en superviserende specialisten niet deskundig genoeg zijn in patiëntenvoorlichting, omdat de oefenvoorwaarden om deze deskundigheid te bereiken onvoldoende aanwezig zijn in het medisch onderwijs en in de klinische praktijk.

De consulten van de specialisten in opleiding werden korter naarmate ze verder in hun opleiding kwamen. Tegen onze verwachting in bleken de consulten van de superviserende specialisten langer te duren dan die van de specialisten in opleiding als we de invloed van variabelen die de consultduur mede bepaalden, buiten beschouwing lieten. Wellicht hameren supervisoren er bij hun opleidelingen voortdurend op om doelmatig te werken, maar worden zij zelf niet aangesproken op de doelmatigheid van hun eigen consulten. We vonden tevens dat de consultduur samenhing met de Regie en Luister deelbekwaamheden. Deze bevinding komt overeen met andere onderzoeken waarin werd aangetoond dat doeltreffende patiëntenvoorlichting niet alleen leidt tot gunstige effecten bij de patiënten, maar ook tot doelmatiger consulten.

De mening van de patiënten over het contact met hun arts was vrijwel gelijk voor de specialisten in opleiding en voor hun supervisoren, hoewel de patiënten iets meer vertrouwen bleken te hebben in de algemene medische bekwaamheid van de supervisoren. De mening van de patiënten hing samen met de Uitleg en Luister deelvaardigheden.

Uit dit onderzoek bleek dat supervisoren onvoldoende bekwaam zijn in patiëntenvoorlichting om geloofwaardig te kunnen zijn als rolmodel, begeleider en beoordelaar voor specialisten in opleiding met als doel om hun bekwaamheid in patiëntenvoorlichting in de klinische praktijk te vergroten. Geregistreerde specialisten moeten eerst hun eigen bekwaamheid in patiëntenvoorlichting verbeteren door middel van doelbewust oefenen

voordat ze als supervisor kunnen optreden voor deze bekwaamheid. Daarom bepleiten we dat zowel specialisten in opleiding als superviserende specialisten hun communicatiebekwaamheid verbeteren door middel van intervisie dat wil zeggen door elkaar op een gelijkwaardige manier wederzijds te beoordelen en feedback te geven over hun communicatie in de klinische praktijk in plaats van dat de specialisten in opleiding eenzijdig worden gesuperviseerd.

Hoofdstuk 7: Hoe word je als medisch specialist deskundig in klinische communicatie?

Het artikel in hoofdstuk 7 analyseert waarom het zo lastig is om als medisch specialist een deskundige te worden in patiëntenvoorlichting. Het artikel bevat tevens een aantal aanbevelingen voor het onderwijs in patiëntenvoorlichting in de medische (vervolg)opleidingen. In het artikel worden zes factoren genoemd die het verkrijgen van deskundigheid belemmeren:

1 Leerlingen moeten hun vertrouwde, maar ondoeltreffende gedragingen afleren.
2 De bekwaamheid in communicatie in verschillende consulten blijkt nogal wisselvallig te zijn. Een goede prestatie in het ene soort consult betekent allerminst ook een goede prestatie in andere soorten van consulten.
3 Communicatiebekwaamheid is sterk afhankelijk van persoonlijkheidseigenschappen en van de persoonlijke en beroepsmatige ontwikkeling van een arts (in opleiding).
4 Communicatiebekwaamheid is afhankelijk van de medische kennis en de klinische ervaring van een arts (in opleiding).
5 Het is lastig om tijdens een consult kritisch naar de eigen communicatie te kijken zonder het soepele verloop van het consult geweld aan te doen.
6 Verbeteren van de communicatiebekwaamheid wordt niet aangemoedigd omdat de gunstige effecten van goede communicatie moeilijk objectief zijn vast te stellen en de klinische cultuur deze verbetering ook niet ondersteund.

In de medische (vervolg)opleidingen zijn de voorwaarden om communicatieve deskundigheid te verkrijgen zoals beschreven door het model van doelbewust oefenen, onvoldoende aanwezig om de bovenstaande belemmeringen te kunnen opheffen. Daarom bereiken studenten en praktiserende artsen slechts een aanvaardbaar niveau van communicatiebekwaamheid dat stevig ligt ingebed in hun vaste gedragsrepertoire. Teneinde de genoemde belemmeringen het hoofd te bieden, geven we in dit artikel een aantal aanbevelingen voor het communicatieonderwijs die zijn gebaseerd op de voorwaarden van doelbewust oefenen. In de eerste plaats stellen we voor om leerdoelen te gebruiken die zijn gebaseerd op de doelen en methoden van patiëntenvoorlichting. Hiervoor kan het RULO model worden gebruikt. Het RULO model beschrijft de vier voorlichtingstaken met bijbehorende vaardigheden die een arts moet toepassen in een consult om de informatieverwerking door de patiënt te bevorderen. In de tweede plaats stellen we voor om onderwijs- en toetsmethoden te gebruiken die:

1 stimulerende leertaken omvatten met mogelijkheden voor directe feedback, overdenken en verbeteren;
2 veel gelegenheid bieden voor herhaling, stapsgewijze verbetering en oefenen in een groot aantal, steeds lastiger situaties.

Een video-op-de-werkvloer programma kan aan deze voorwaarden voldoen en kan worden gebruikt om de voorlichtingbekwaamheid van specialisten in opleiding en van geregistreerde specialisten te verbeteren. Zo'n video-op-de-werkvloer programma houdt in dat studenten of artsen aan de hand van video-opnames van consulten hun eigen communicatie beoordelen en daarover tevens feedback krijgen van medestudenten, collega's en/of supervisoren. Een video-op-de-werkvloer programma heeft enkele belangrijke voordelen boven beoordeling en feedback aan de hand van directe observaties, zoals dat gebeurt met een Korte Praktijk Beoordeling (KPB). Om echter als onderwijsmethode op de werkvloer doeltreffend te zijn, moet het video-op-de-werkvloer programma voldoen aan een aantal eisen.

1 Het programma moet plaatsvinden in een stimulerende leeromgeving waarin alle collega's en supervisoren bereid zijn hun communicatiebekwaamheid te verbeteren.
2 Het programma moet een regelmatig en vanzelfsprekend onderdeel zijn van de opleiding en van blijvend leren.

3 het programma moet uitgaan van een doelgerichte benadering van communicatiebeoordeling en feedback, dat wil zeggen dat de beoordeling en feedback zich richten op de consultdoelen, op de communicatieve aanpak om deze doelen te bereiken en op de resultaten die in het consult worden bereikt.
4 De video-opnames van de consulten en de feedback besprekingen dienen als vaste onderdelen te worden ingepland in het onderwijsprogramma.
5 Aan de patiënten dient niet alleen om toestemming te worden gevraagd, maar ook moet worden nagegaan wat ze van het consult vonden, wat ze hebben begrepen van de voorlichting en wat ze van plan zijn te gaan doen.
6 De video-opnames moeten van technisch goede kwaliteit zijn.
7 De studenten of artsen dienen gemakkelijk toegang te hebben tot de video-opnames die van hen zijn gemaakt of waarover zij feedback moeten geven. Andere personen mogen geen toegang krijgen tot deze video-opnames.
8 De resultaten van de zelfbeoordeling en de feedback dienen te worden vastgelegd in het opleidingsportfolio teneinde de vooruitgang in de communicatiebekwaamheid te kunnen vaststellen.

In het laatste gedeelte van dit hoofdstuk staat een beschrijving van het video-op-de-werkvloer programma, genaamd video-CAF (Communication Assessment and Feedback), dat is ingevoerd bij twee afdelingen van het Universitair Medisch Centrum Groningen.

Hoofdstuk 8: De effecten van zelfbeoordeling en van de feedback van supervisoren op de bekwaamheid in patiëntenvoorlichting van specialisten in opleiding door gebruik te maken van op video opgenomen poliklinische consulten

In het onderzoek dat staat beschreven in hoofdstuk 8, zijn we nagegaan in hoeverre het video-CAF programma uitvoerbaar is en wat de effecten ervan waren op het inzicht van de specialisten in opleiding in hun eigen communicatiebekwaamheid, op hun feitelijke bekwaamheid in patiëntenvoorlichting en op de mening van hun patiënten over het contact met hun arts. Het video-CAF programma bestond uit een onderwijsmethode

voor zelfbeoordeling en feedback aan de hand van op video opgenomen poliklinische consulten aangevuld met een bijscholing voor de supervisoren en een instructie van de specialisten in opleiding. De bijscholing voor de supervisoren bestond uit drie bijeenkomsten met instructies en oefeningen in kleine groepen en twee individuele bijeenkomsten waarin de supervisor feedback kreeg over zijn eigen communicatie. Tijdens de instructie schreven de specialisten in opleiding zoveel mogelijk gedragingen op die ze wilden blijven doen (voortzettingpunten) en die ze wilden verbeteren (verbeterpunten). Na iedere feedbackbespreking met een supervisor schreven de specialisten in opleiding een nieuwe lijst met voortzetting- en verbeterpunten op. Twee beoordelaars beoordeelden hun bekwaamheid in patiëntenvoorlichting met behulp van het RULO instrument. De specialisten in opleiding en hun supervisoren gebruikten voor hun beoordelingen een vereenvoudigde versie van dit instrument. Direct na het consult vulden de patiënten een vragenlijst met tien vragen in over het contact met hun arts.

Vierenveertig specialisten in opleiding en 21 supervisoren deden mee aan het video-CAF programma. Achtenzeventig spreekuren werden op video opgenomen waarvan per spreekuur twee consulten werden uitgekozen om te beoordelen. Er zijn dus 156 consulten beoordeeld. De deelnemende specialisten in opleiding werden zich meer bewust van welke gedragingen zij wilden voortzetten en welke gedragingen ze wilden verbeteren in het contact met hun patiënten. Zij werden zich vooral bewust van hun matige luistervaardigheden en in iets mindere mate van hun zwakke regie vaardigheden. Deze resultaten komen overeen met ander onderzoek waaruit blijkt dat het terugzien van video-opnames leidt tot een verbetering van zelfbeoordeling mits de kwaliteitsstandaarden duidelijk zijn. De specialisten in opleiding schreven echter nauwelijks leerpunten op die hun overlegvaardigheden betroffen.

Gemiddeld genomen bleken de specialisten in opleiding te weinig bekwaam in patiëntenvoorlichting. Deelname aan het video-CAF programma verbeterde wel hun vaardigheden voor het regie houden over het gesprek en voor het bewaken van de verstandhouding (Regie deelbekwaamheid), maar niet hun andere deelbekwaamheden, ondanks dat er in de feedbackbesprekingen veel aandacht werd besteed aan de luistervaardigheden. Op grond hiervan denken we dat voor het verbeteren van de Luister deelbekwaamheid meer doelbewust oefenen nodig is dan voor de Regie deelbekwaamheid. We denken tevens dat er tijdens de feedback-

besprekingen onvoldoende aandacht werd besteed aan de overlegvaardigheden. Dit wijst op een tekortkoming in de beoordeling en feedback van de supervisoren wat betreft de overlegvaardigheden.

Het aantal jaren dat iemand al in opleiding was, had een klein tot matig effect op de algemene bekwaamheid in patiëntenvoorlichting en op drie van de vier deelbekwaamheden. Dit wijst op een soort 'natuurlijke' groei van de voorlichtingbekwaamheid ten gevolge van de toenemende klinische ervaring. Communicatievaardigheden onderwijs in het verleden bleek wel van invloed op het aantal leerpunten dat werd opgeschreven, maar bleek geen invloed te hebben op het communicatiegedrag en ook niet op de mening van de patiënten. Deze uitkomst bevestigt dat communicatievaardigheden onderwijs maar weinig effect heeft op de arts-patiënt communicatie in de klinische praktijk en op de effecten hiervan bij patiënten.

Dit onderzoek toonde aan dat zelfbeoordeling van en feedback door supervisoren over de communicatiebekwaamheid van specialisten in opleiding door gebruik te maken van op video opgenomen poliklinische consulten, werkbaar is en ook leidt tot meer bekwaamheid in patiëntenvoorlichting bij specialisten in opleiding. Video-CAF zou invulling kunnen geven aan het huidige gebrek aan communicatieonderwijs in de vervolgopleidingen, mits de supervisoren voldoende worden bijgeschoold in het beoordelen van de communicatie van specialisten in opleiding en in het geven van feedback.

Hoofdstuk 9: Algemene discussie en conclusies

In hoofdstuk 9 staan de antwoorden op de onderzoeksvragen van dit proefschrift aangevuld met onze bedenkingen over deze antwoorden. In het laatste gedeelte van dit hoofdstuk staan onze aanbevelingen voor de patiëntenvoorlichting in de klinische praktijk, voor het medisch onderwijs en voor verder wetenschappelijk onderzoek.

De *eerste onderzoeksvraag* was welke factoren een rol spelen bij het aanleren en toepassen van doeltreffende arts-patiënt communicatie. Ons antwoord op deze vraag is gebaseerd op het model van beschouwend-spontaan handelen en op het model van doelbewust oefenen. Het model van beschouwend-spontaan handelen beschrijft de factoren die een rol spelen

bij het leren en toepassen van professioneel communicatiegedrag. Het model verklaart tevens waarom de resultaten van medisch communicatieonderwijs zo tegenvallen. Uit het model van doelbewust oefenen zijn de oefenomstandigheden af te leiden die nodig zijn om communicatief deskundig te worden. Deskundigheid in communicatie betekent dat een arts beschikt over een hoogwaardig en duurzaam vermogen om doeltreffend om te gaan met communicatief lastige situaties. Het huidige communicatieonderwijs voldoet niet aan deze voorwaarden van doelbewust oefenen.

Wij denken dat beide modellen een stevig theoretisch fundament bieden om de arts-patiënt communicatie in de klinische praktijk te bestuderen en om het arts-patiënt communicatieonderwijs in de medische opleidingen te verbeteren. Desondanks hebben beide modellen ook hun beperkingen. Beide modellen behandelen alleen het leren en gedrag van geïsoleerde individuen en gaan niet in op de sociale dynamiek van leren. In dit proefschrift hebben we een aantal op de modellen gebaseerde hypotheses getoetst. Onze aanbevelingen voor het communicatieonderwijs zijn eveneens gebaseerd op de beide modellen.

De *tweede onderzoeksvraag* ging over de betrouwbaarheid en geldigheid van een instrument om de bekwaamheid in patiëntenvoorlichting van artsen te beoordelen. Het RULO instrument dat we hebben ontwikkeld om de communicatiebekwaamheid in het algemeen en de bekwaamheid in patiëntenvoorlichting in het bijzonder te beoordelen, is gebaseerd op een beproefd model van patiëntenvoorlichting. Het RULO model beschrijft de communicatieve taken van een arts met de bijbehorende vaardigheden die nodig zijn om de doelen van de patiëntenvoorlichting in een consult te bereiken. Deze taken of deelbekwaamheden zijn: Regie, Uitleg geven, Luisteren en Overleggen. Het RULO instrument beoordeelt hoe en wanneer de vereiste vaardigheden worden gebruikt en levert op basis hiervan prestatiescores op voor de vier deelbekwaamheden en voor de gehele bekwaamheid in patiëntenvoorlichting. We hebben het RULO instrument gebruikt in vijf empirische onderzoeken. De inter-beoordelaar betrouwbaarheden bleken uitstekend voor de gehele bekwaamheidscores en aanvaardbaar tot goed voor de deelbekwaamhedenscores. We deden een kruisvalidatie van het RULO instrument met twee andere maten van patiëntgerichte communicatie en toetsten de geldigheid tevens door een verband aan te tonen van de RULO scores met andere variabelen waarvan

uit de literatuur bekend is dat ze samenhangen met de kwaliteit van de arts-patiënt communicatie.

Hoewel uit onze onderzoeken bleek dat het RULO instrument een betrouwbaar en geldig instrument is om de bekwaamheid in patiëntenvoorlichting van artsen te beoordelen, ontbreekt het nog aan een grondig onderzoek naar de theoretische geldigheid van het instrument. De geldigheid is alleen nog maar getoetst aan de samenhang met patiënttevredenheid en met de mening van patiënten over het contact en niet aan de samenhang met beoogde effecten bij patiënten zoals het begrijpen en onthouden van informatie, opvolgen van adviezen, vertrouwen in eigen kunnen, gedragsverandering, het vermogen tot zelfzorg en hun gezondheidstoestand. We weten daarom nog niet of de kwaliteitsmaat die het instrument aangeeft en die is gebaseerd op de verhouding tussen het aantal doeltreffende en het aantal ondoeltreffende uitingen, overeenkomt met een externe kwaliteitsmaat die is gebaseerd op de beoogde effecten bij patiënten.

Het antwoord op onze *derde onderzoeksvraag* is duidelijk. In al onze onderzoeken bleek dat gemiddeld genomen de specialisten in opleiding en de geregistreerde specialisten onvoldoende bekwaam waren in patiëntenvoorlichting. Deze bekwaamheid bleek ongeveer gelijk voor beide groepen zowel in nagebootste consulten als in echte, poliklinische consulten. In één van de onderzoeken bleken de specialisten in opleiding beter te zijn in luistervaardigheden, terwijl de geregistreerde specialisten beter waren in overlegvaardigheden.

Het feit dat specialisten onvoldoende bekwaam zijn in patiëntenvoorlichting komt overeen met onze verwachtingen op basis van het model van beschouwend-spontaan handelen en het model van doelbewust oefenen dat specialisten (in opleiding) geen deskundigen kunnen zijn in patientenvoorlichting, omdat de oefenvoorwaarden om deze deskundigheid te verwerven niet aanwezig zijn in het medisch onderwijs en in de klinische praktijk. We willen er wel op wijzen dat deze conclusie is gebaseerd op de gemiddelde prestatie zoals die met het RULO instrument is gemeten, en dat daarbij geen rekening is gehouden met de wisselvalligheid in communicatiebekwaamheid, dat wil zeggen met de variatie in prestatiekwaliteit van de individuele artsen over de verschillende consulten. In twee onderzoeken bleek er sprake te zijn van aanzienlijke wisselvalligheid in bekwaamheid. Het aantal artsen dat (meer dan) voldoende bekwaam was

in al hun consulten, viel dan ook aanzienlijk lager uit dan het aantal artsen dat gemiddeld genomen een (meer dan) voldoende bekwaamheidscore kreeg.

De *vierde onderzoeksvraag* ging over het effect van communicatievaardigheden onderwijs en klinische ervaring op de bekwaamheid in patiëntenvoorlichting van studenten, specialisten in opleiding en medisch specialisten. Op basis van het model van beschouwend-spontaan handelen en het model van doelbewust oefenen voorspelden we een beperkt effect van communicatieonderwijs in het basiscurriculum en van klinische ervaring tijdens de vervolgopleiding op de bekwaamheid in patiëntenvoorlichting. Uit het dwarsdoorsnedenonderzoek dat in hoofdstuk 4 is besproken, bleek dat communicatievaardigheden onderwijs in de basisopleiding de bekwaamheid van studenten in het geven van voorlichting in lastige consulten nauwelijks verbeterde. Het prestatieniveau van studenten kwam al vroeg in de studie op een 'aanvaardbaar' niveau en dit niveau bleek ook aanwezig bij de studenten uit latere studiejaren en bij de specialisten in opleiding. De klinische ervaring van de specialisten in opleiding verhoogde dit bekwaamheidsniveau niet en de geregistreerde specialisten bereikten met hun klinische ervaring hetzelfde aanvaardbare niveau.

Ook onze andere onderzoeken bevestigden dat communicatievaardigheden onderwijs maar weinig effect heeft op de communicatiebekwaamheid. Op grond van deze bevindingen kwamen we tot de slotsom dat het effect van communicatievaardigheden onderwijs en klinische ervaring voor zover al aanwezig, zeker niet voldoende is om de bekwaamheid in patiëntenvoorlichting van artsen tot een voldoende hoog niveau, laat staan tot op het niveau van deskundigheid te brengen. We trekken deze conclusie echter met enige voorzichtigheid, aangezien onze onderzoeken methodologisch vrij zwak waren. Het waren dwarsdoorsnedenonderzoeken en geen interventieonderzoeken waarin de deelnemers willekeurig werden ingedeeld in een interventiegroep en in een controlegroep en vervolgens over de tijd werden gevolgd. De omvang van het communicatieonderwijs en van de klinische ervaring werden ook niet experimenteel gemanipuleerd. Daardoor konden we niet goed onderscheiden welk deel van het effect op de bekwaamheid in patiëntenvoorlichting kon worden toegeschreven aan het communicatieonderwijs in het verleden en welk deel van het effect voor rekening kwam van de klinische ervaring.

De *vijfde onderzoeksvraag* ging over het effect van consultkenmerken op de bekwaamheid in het geven van voorlichting aan patiënten. Op basis van het model van beschouwend-spontaan handelen voorspelden we dat de wisselvalligheid in prestatie ten gevolge van verschillen in de consultkenmerken en in de omstandigheden groter zal zijn, wanneer de consulten meer van elkaar verschillen wat betreft de doelen, de opbouw en de vereiste vaardigheden. In het onderzoek in hoofdstuk 5 hebben we deze voorspelling getoetst. In dit onderzoek vonden we dat ongeveer de helft van de variatie in bekwaamheid was toe te schrijven aan verschillen tussen de artsen en de andere helft in de variatie was toe te schrijven aan de verschillen tussen de consulten. De wisselvalligheid in prestatie was groter naarmate de consulten meer van elkaar verschilden in doelen, opbouw en vereiste vaardigheden. Op grond van deze bevindingen stelden we vast dat de wisselvalligheid in prestatie afhangt van de consultkenmerken. De wisselvalligheid in prestatie in lastige poliklinische consulten bleek ongeveer even groot te zijn als de wisselvalligheid in prestatie in de nagebootste lastige consulten die van elkaar verschilden wat betreft de doelen, opbouw en vereiste vaardigheden.

Het effect van communicatieonderwijs in het verleden op de communicatiebekwaamheid bleek eveneens afhankelijk te zijn van de consultkenmerken. Dit betekent dat communicatief gedrag dat in een bepaald soort consult en onder bepaalde omstandigheden is aangeleerd, niet snel veralgemeniseerd naar andere soorten consulten en andere omstandigheden. Het onderzoek waarin we het effect van video-CAF onderzochten (hoofdstuk 8), bevestigde deze afhankelijkheid van de consultkenmerken van het effect van communicatievaardigheden onderwijs in het verleden op communicatiebekwaamheid.

In hoeverre zelfbeoordeling van de communicatie met patiënten aangevuld met feedback van klinisch supervisoren de bekwaamheid van specialisten in opleiding in patiëntenvoorlichting kan verbeteren, was onze *zesde onderzoeksvraag*. We hebben de effecten onderzocht van een onderwijsmethode voor zelfbeoordeling van de communicatie van specialisten in opleiding, aangevuld met feedback van supervisoren op basis van op video opgenomen poliklinische consulten (video-CAF). Door hun deelname aan de video-CAF methode werden de specialisten in opleiding zich meer bewust van hun communicatiebekwaamheid. Zij werden zich vooral bewust van hun matige luistervaardigheden en in iets mindere mate van

hun zwakke regie vaardigheden. Aan de overlegvaardigheden besteedden zij de minste aandacht. Deelname aan video-CAF leidde tevens tot een verbetering van de vaardigheden voor de regie over het gesprek en het bewaken van de verstandhouding (Regie deelbekwaamheid). Deelname aan video-CAF had geen effect op de andere deelbekwaamheden. Uit dit onderzoek bleek dat video-CAF een werkbare methode is voor zelfbeoordeling en feedback van supervisoren en ook leidt tot een lichte verbetering van de communicatiebekwaamheid in de klinische praktijk van specialisten in opleiding. Deze methode kan worden ingezet om het bestaande gebrek aan communicatieonderwijs in de vervolgopleidingen op te vullen, mits de supervisoren voldoende worden bijgeschoold in het beoordelen van de communicatie van specialisten in opleiding en in het geven van feedback. Ons onderzoek waarin we de bekwaamheid van specialisten in opleiding vergeleken met de bekwaamheid van hun supervisoren (hoofdstuk 6), toonde echter aan dat de supervisoren onvoldoende bekwaam zijn in patiëntenvoorlichting om geloofwaardig te kunnen zijn als rolmodel, begeleider en beoordelaar voor specialisten in opleiding. Daarom bepleiten we dat zowel specialisten in opleiding als supervisierende specialisten hun communicatiebekwaamheid verbeteren door middel van intervisie dat wil zeggen door elkaar op een gelijkwaardige manier wederzijds te beoordelen en feedback te geven over hun communicatie in de klinische praktijk in plaats van dat de specialisten in opleiding eenzijdig worden gesuperviseerd.

Conclusies en aanbevelingen

In paragraaf 9.3 staan onze algemene conclusies en onze aanbevelingen voor de patiëntenvoorlichting in de klinische praktijk, voor het medisch onderwijs en voor verder wetenschappelijk onderzoek. Op grond van de bevindingen uit onze onderzoeken stelden we vast dat de bekwaamheid in patiëntenvoorlichting van medisch specialisten (in opleiding) niet van voldoende kwaliteit is en bovendien wisselvallig van kwaliteit is. Kwaliteitsverbetering en vermindering van de wisselvalligheid lijken dan ook noodzakelijk. Door een doelgerichte aanpak van klinische communicatie als uitgangspunt te nemen, zou er al een belangrijke stap kunnen worden gezet in de richting van deze verbeteringen. Zo'n doelgerichte aanpak houdt in dat medisch specialisten trachten om in hun consulten op een

doeltreffende en doelmatige manier de patiëntenvoorlichtingdoelen, geformuleerd in SMART termen, te bereiken. SMART is het acroniem van Specifiek, Meetbaar, Aanvaardbaar, Realistisch en in de Tijd beperkt. Het werken met SMART doelen levert echter twee dilemma's op. Het eerste dilemma betreft de vraag in hoeverre de zelfverantwoordelijke zelfbepaling en keuzevrijheid van patiënten kan en moet worden gerespecteerd. Hebben hulpverleners het recht en ook de verantwoordelijkheid om de keuzes en het gedrag van patiënten openlijk of zelfs stiekem te beïnvloeden om 'gezonder' gedrag te bewerkstelligen? Het tweede dilemma betreft de vraag of alle medisch specialisten deskundig kunnen en moeten worden op het gehele terrein van de patiëntenvoorlichting. Medisch specialisten zijn onvoldoende toegerust om ingewikkelde voorlichtingsmethodieken, waarvan de gunstige effecten op het gedrag en de gezondheid van patiënten duidelijk zijn vastgesteld, te kunnen gebruiken en ze worden bij het gebruik daarvan ook niet ondersteund.

Communicatievaardigheden onderwijs maakt al tientallen jaren deel uit van de medische basisopleidingen en van de vervolgopleidingen voor huisartsen. Het effect van al dit onderwijs is echter nogal teleurstellend. In dit proefschrift zijn diverse belemmeringen genoemd die het lastig maken om een deskundige te worden in de klinische communicatie. In de basisopleidingen en in de vervolgopleidingen blijken de oefenvoorwaarden om deskundigheid te verkrijgen door middel van doelbewust oefenen, onvoldoende aanwezig te zijn. In dit proefschrift staan een aantal aanbevelingen om deze oefenvoorwaarden wel te realiseren. In de eerste plaats hebben we voorgesteld om uit te gaan van doelgerichte leerdoelen die zijn afgeleid van de doelen en methodieken van patiëntenvoorlichting in de klinische praktijk. In de tweede plaats hebben we aanbevolen om onderwijs- en toetsmethoden te gebruiken die:

1 stimulerende leertaken omvatten met mogelijkheden voor directe feedback, overdenken en verbeteren;
2 veel gelegenheid bieden voor herhaling, stapsgewijze verbetering en oefenen in een groot aantal, steeds uitdagender situaties.

Het probleem van de beperkte overdracht van de communicatiebekwaamheid die is opgedaan in cursorisch vaardighedenonderwijs, naar de klinische praktijk kan worden aangepakt door video-CAF als onderwijsmethode te gebruiken, dat wil zeggen zelfbeoordeling van de communicatiebekwaamheid aangevuld met feedback van supervisoren op basis van op

video opgenomen consulten. Uit ons onderzoek bleek dat video-CAF een werkbare en werkzame methode is om de communicatiebekwaamheid van specialisten in opleiding te verbeteren. Superviserende medisch specialisten zijn echter onvoldoende bekwaam in patiëntenvoorlichting om op de werkvloer geloofwaardig te kunnen optreden als rolmodel, begeleider en beoordelaar voor het verbeteren van de bekwaamheid in patiëntenvoorlichting van specialisten in opleiding. Daarom bepleiten we dat zowel specialisten in opleiding als superviserende specialisten hun communicatiebekwaamheid verbeteren door middel van intervisie dat wil zeggen door elkaar op een gelijkwaardige manier wederzijds te beoordelen en feedback te geven over hun communicatie in de klinische praktijk in plaats van dat de specialisten in opleiding eenzijdig worden gesuperviseerd.
Onze aanbevelingen voor verder wetenschappelijk onderzoek betreffen:

1 het RULO instrument;
2 het model van beschouwend-spontaan handelen en het model van doelbewust oefenen;
3 de video-CAF methode.

De geldigheid van het RULO instrument dient verder te worden onderzocht om vast te stellen of de scores van het RULO instrument samenhangen met gewenste voorlichtingsuitkomsten en om een externe kwaliteitsmaat te kunnen bepalen die is gebaseerd op de beoogde effecten bij patiënten. Een onderzoek naar de bekwaamheid in patiëntenvoorlichting van artsen die uitstekende resultaten weten te behalen met hun patiëntenvoorlichting, zou daarvoor nuttig kunnen zijn.

We denken dat het model van beschouwend-spontaan handelen en het model van doelbewust oefenen nuttig kunnen zijn om onze kennis over het aanleren en toepassen van communicatie in de klinische praktijk verder te ontwikkelen. Verdere toetsing van de voorspellingen over het verwerven van communicatiebekwaamheid die uit deze modellen voortkomen, is dan ook wenselijk. De video-CAF methode kan voldoen aan de oefenvoorwaarden voor het verkrijgen van deskundigheid in patiëntenvoorlichting, die voortkomen uit het model van doelbewust oefenen. Daarom vinden we het wenselijk dat er gerandomiseerde interventieonderzoeken komen naar de effecten van de invoering van video-CAF in de vervolgopleidingen, waarbij niet alleen het effect van video-CAF op de bekwaamheid in patiëntenvoorlichting wordt onderzocht, maar ook wordt gekeken naar het effect van video-CAF op de beoogde resultaten bij patiënten.

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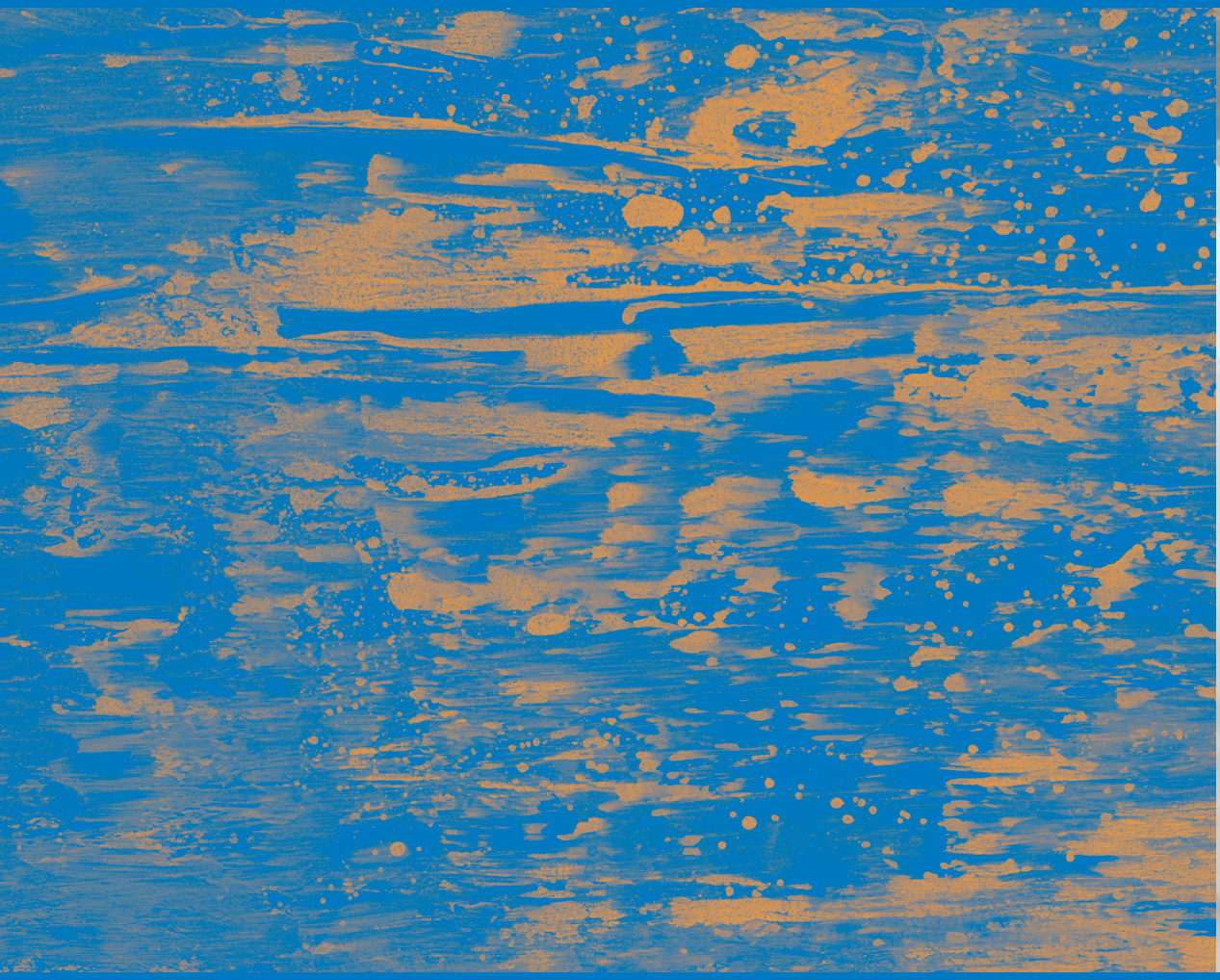

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